Final Report Phase I RCRA Facility Investigation for Appendix I Sites

VOLUME I

SWMU-8, Fire Training Area 2



Department of the Air Force Oklahoma City Air Logistics Center Tinker Air Force Base, Oklahoma

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List of Acronyms

AFB Air Force Base
AOC area of concern

BAT best available technology

CAA Clean Air Act

CAL corrective action levels

CDM Federal Programs Corporation

CEC cation exchange capacity

CERCLA Comprehensive Environmental Response, Compensation, and Liability Act

CFR Code of Federal Regulations

cm/s centimeters per second COD chemical oxygen demand

COE U.S. Army Corp of Engineers
CMS Corrective Measures Study
CPT cone penetrometer testing

DCA dichloroethane
DCE dichloroethene

DERP Defense Environmental Restoration Program

DNAPL dense nonaqueous-phase liquids
DOD U.S. Department of Defense
DWS drinking water standards

EC electric conductivity

EID Engineering Installation Division

EMO Environmental Management Operations EPA U.S. Environmental Protection Agency

ES Engineering Science

FID flame ionization detector

ft/ft foot per foot

FTA2 Fire Training Area 2 HCl hydrochloric acid

HRS Hazardous Ranking System

HSWA Hazardous and Solid Waste Amendments

IRP Installation Restoration Program

IT IT Corporation

IWTP industrial wastewater treatment plant

List of Acronyms (Continued)_

LSZ lower saturated zone

μg/kg micrograms per kilogram

μg/L micrograms per liter

MCL maximum contaminant level

MCLG maximum contaminant level goal

mg/kg milligrams per kilogram

mg/L milligrams per liter

m³ cubic meters
msl mean sea level
MW monitoring well

NAAQS National Ambient Air Quality Standards

NCP National Oil and Hazardous Substances Pollution Contingency Plan

NPL National Priorities List

O.D. outside diameter
OU operable unit

PA/SI preliminary assessment/site investigation

PCE tetrachloroethene

PID photoionization detector

PVC polyvinyl chloride QC quality control

RCRA Resource Conservation and Recovery Act

RFI RCRA Facility Investigation

RI/FS remedial investigation/feasibility study

ROD record of decision

SARA Superfund Amendments and Reauthorization Act

SOP standard operating procedure

SP self potential

SVOC semivolatile organic compound SWMU solid waste management unit

TCA trichloroethane
TCE trichloroethene

TDS total dissolved solids

TSD treatment, storage, and disposal (facility)

TOC total organic carbon

List of Acronyms (Continued)_

TPH total petroleum hydrocarbons
USACE U.S. Army Corps of Engineers

USC U.S. Code

USDA U.S. Department of Agriculture

USGS U.S. Geological Survey USZ upper saturated zone

VOC volatile organic compounds

WQS Water Quality Standards

yd³ cubic yards

Executive Summary

This report provides a summary of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) conducted at solid waste management unit (SWMU)-8, Fire Training Area 2 (FTA2), Tinker Air Force Base (AFB), Oklahoma. The report has been prepared to determine whether hazardous constituents as defined by federal regulations have been released into the environment from the FTA2. The RFI for this unit has been conducted in accordance with the Work Plan prepared by CDM Federal Programs Corporation (CDM) (1992). This RFI Report presents the following information:

- Site characterization (Environmental Setting)
- Source definition (Source Characterization), if any
- Degree of contamination (Contamination Characterization)
- Identification of actual or potential receptors
- Analytical results and analysis (data analysis)
- Identification of groundwater protection standards and action levels for the protection of human health and the environment (protection standards)
- Conclusions and recommendations for future work.

Tinker AFB is located in central Oklahoma, in the southeast portion of the Oklahoma City metropolitan area, in Oklahoma County. The Base is bounded by Sooner Road to the west, Douglas Boulevard to the east, Interstate 40 to the north, and Southeast 74th Street to the south. The Base encompasses 5,000 acres.

Background. Tinker AFB began operations in 1942 and serves as a worldwide repair depot for a variety of aircraft, weapons, and engines. These activities require the use of hazardous materials and result in the generation of hazardous wastes. These wastes have included spent organic solvents, waste oils, waste paint strippers and sludges, electroplating wastewaters and sludges, alkaline cleaners, acids, FreonTM, jet fuels, and radium paints.

In 1984, Congress amended the RCRA with the Hazardous and Solid Waste Amendments (HSWA), which allow U.S. Environmental Protection Agency (EPA) to require, as a permit condition, a facility to undertake corrective action for any release of hazardous waste or

constituents from any SWMU at a treatment, storage, and disposal (TSD) facility. On January 12, 1989, Tinker AFB submitted its Part B permit application for renewal of its operating RCRA Hazardous Waste Storage facility permit. The final RCRA HSWA permit issued on July 1, 1991, requires Tinker AFB to investigate all SWMUs and areas of concern (AOC) and to perform corrective action at those identified as posing a threat to human health or the environment. The permit specifies that an RFI be conducted for 43 identified SWMUs and two AOCs on the Base. This document has been prepared to determine whether sufficient investigations have been conducted to meet the permit requirements for FTA2.

Source Description. FTA2 is located in the south-central portion of Tinker AFB. The site is located northwest of the control tower and north of Crutcho Creek. FTA2 was established as a temporary, unlined pit and was used infrequently between 1962 and 1966. Standard operating procedures (SOP) included adding water to the pit to saturate the soil and reduce infiltration. Fuel was then brought in by tank truck, placed on top of the water, ignited, and extinguished using water and a protein-based foam. Any residues were left in the pit to evaporate and infiltrate prior to the next fire training exercise. As a result, some residual fuels may have infiltrated into the subsurface. Records for construction, operation, or destruction do not exist, so data on composition, frequency, and quantity of fuel used are not available and it is assumed that the site was simply abandoned. The site now appears as a gently sloping grassy area with no visible signs of its past use as a fire training area. During an Installation Restoration Program (IRP) Response Action performed by the U.S. Army Corps of Engineers (USACE) (December 1988), soil beneath the site was analyzed for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and total metals. Only very low concentrations of organic compounds were detected. This investigation revealed that more information was needed concerning background concentrations of metals in the soil in this portion of Tinker AFB.

Site Investigations. A total of 22 soil samples were collected from the eight monitoring wells installed at FTA2 for chemical analysis. The analyses included VOCs, SVOCs, and metals (aluminum, arsenic, barium, beryllium, cadmium, chromium, chromium VI, copper, iron, lead, mercury, nickel, silver, and zinc).

Relatively low concentrations of organic contaminants were detected within the unsaturated soils to a depth of 23 feet. The only organic constituent detected in soil samples at a concentration greater than the method detection limit was 1,1,1-trichloroethane (TCA). Metals concentrations were within the range of background soil concentrations reported in a

study of the four-county area surrounding Tinker AFB by the U.S. Geological Survey (USGS).

Four monitoring well clusters were installed around the approximate location of FTA2: four monitoring wells in the upper saturated zone (USZ) and four monitoring wells in the lower saturated zone (LSZ).

The VOCs detected in the four USZ wells and their maximum concentrations included: trichloroethene (TCE) (8,900 micrograms per liter [μ g/L]), cis-1,2-dichloroethene (1,700 μ g/L), 1,2-dichloroethane (550 μ g/L), chlorobenzene (240 μ g/L), trans-1,2-dichloroethene (140 μ g/L), 1,1,2-trichloroethane (9.0 μ g/L), 1,2-dichloropropane (7.3 μ g/L), 1,1-dichloroethene (6.0 μ g/L), and benzene (5.7 μ g/L). Volatiles detected below the quantitation limit were toluene, tetrachloroethene, and chloroform. Concentrations in well 2-62B were generally two orders of magnitude higher than in the other USZ wells. The LSZ has not been impacted by the operations at FTA2.

Concentrations of several VOCs were above the corrective action levels (CAL) proposed in Title 40 Code of Federal Regulations (CFR) Part 264.521, primarily in samples from well 2-62B. These include, in well 2-62B, the concentrations of 1,1,2-TCA and tetrachloroethene. Other compounds, for which no CAL is available, were present in well 2-62B at concentrations which exceeded MCLs, including trichloroethene, cis-1,2-dichloroethene, 1,2-dichloroethene, 1,2-dichloroethene, 1,2-dichloroethene, 1,2-dichloroethene (DCA), benzene, and trans-1,2-dichloroethene. In addition, concentrations of TCE in USZ wells 2-63B, 2-64B, and 2-65B also exceeded CALs.

The SVOCs detected in the four USZ wells and their maximum concentrations included: 1,2-dichlorobenzene (1,900 μ g/L), 1,4-dichlorobenzene (290 μ g/L), and 1,3-dichlorobenzene (53 μ g/L). Bis(2-ethylhexyl)phthalate was detected below the quantitation limit in a sample from LSZ well 2-62A.

Concentrations of two SVOCS were above MCLs. This includes 1,2- dichlorobenzene and 1,4-dichlorobenzene in well 2-62B.

Metal concentrations within the groundwater (USZ and LSZ) are below maximum contaminant levels (MCL) for the detected metals.

Conclusions. The USZ has been impacted at FTA2; however, the LSZ has not been impacted. Principal organic contaminants in the USZ include TCE, cis-1,2-dichloroethene, and 1,2-dichlorobenzene. The highest concentrations of the contaminants were found in well 2-62B. FTA2 is apparently not the source of the contaminants, and there is apparently not any significant ongoing release from the FTA2 SWMU. The extent and the source of groundwater contamination cannot be defined by the present wells.

The source of the contaminants may be downward leakage of contaminated surface water from a nearby tributary to Crutcho Creek. The channel of the creek is deeply incised into the upper clay/silt unit. In addition, the water table is anomalously flat in this area, suggesting possible mounding due to localized recharge. This tributary drains an area occupied by industrial facilities on the east side of the airfield, and emerges from a culvert in the near vicinity of the SWMU.

Recommendations for Additional Work. Based on the results of the investigation of the FTA2, the following additional work is recommended:

- Interview Base personnel to determine if any previously unrecognized wastegenerating activities have been conducted in this area
- Examine aerial photographs to determine if locations of any potential wastegenerating activities are evident.
- Install temporary well points to collect samples from USZ to the north and east of well 2-62B and analyze samples for VOCs, SVOCs, total organic carbon (TOC), and total petroleum hydrocarbons (TPH).
- Install additional monitoring well(s) at location(s) selected based on results of analysis.
- Collect site-specific soil background samples to be used in addition to USGS soil data to distinguish site-related from background concentrations in a statistically significant manner during the Phase II investigation.
- Further define the extent of contamination by determining the location, number, and depth of soil borings/monitoring wells during the development of a Phase II RFI work plan.
- Submit Phase II work plan to EPA for approval before conducting any field activities.

1.0 Introduction

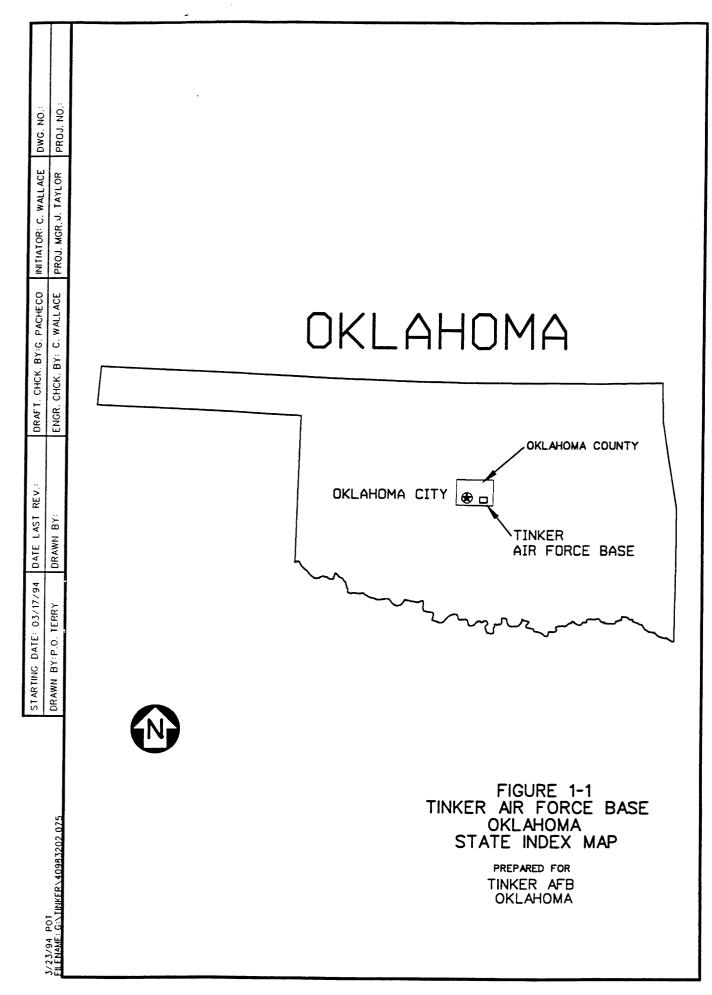
The U.S. Department of the Air Force is conducting an Installation Restoration Program (IRP) at Tinker Air Force Base (AFB), Oklahoma (Figure 1-1). This program intends to identify sites through initial assessment, characterize each solid waste management unit (SWMU) or area of concern (AOC), study and select cleanup methods, if required, and implement a cleanup. In support of this effort, a Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) was conducted at Fire Training Area 2 (FTA2), SWMU-8, at Tinker AFB, Oklahoma (Figure 1-2). This Phase I investigation focuses its efforts on determining if there have been any releases of contamination to the soil and groundwater resulting from previously placing fuel within water-filled pits for fire training purposes.

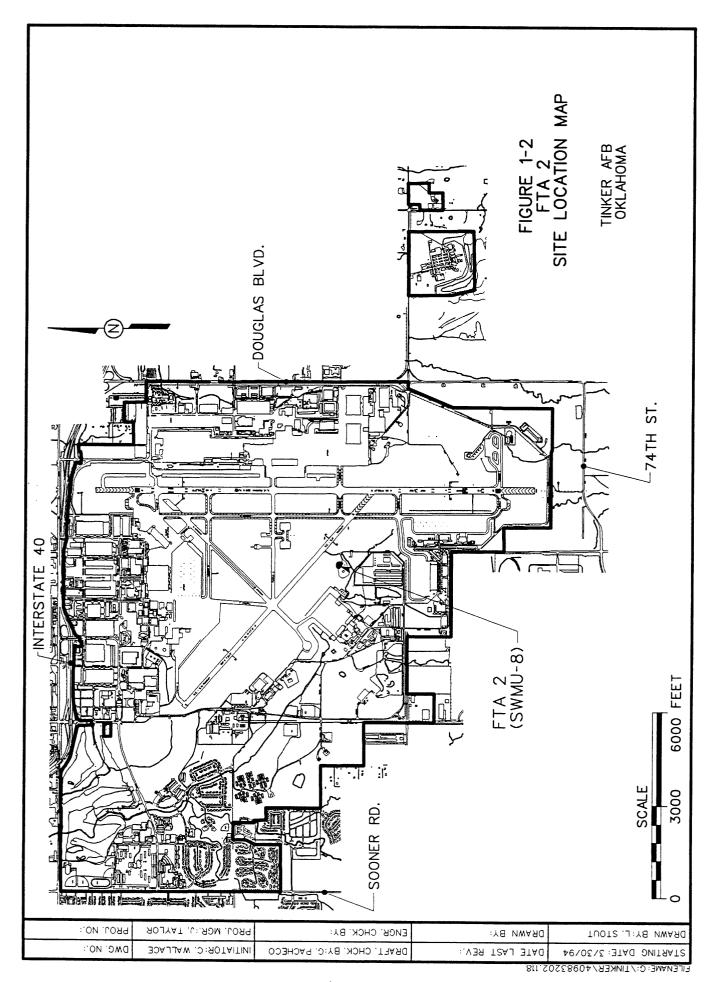
Adequate information was gathered in this Phase I RFI to support a Phase II investigation, a Corrective Measures Study (CMS), or interim measures, if necessary. A phased approach has been taken by Tinker AFB for the FTA2 site investigation. This phasing of the RFI is in accordance with the U.S. Environmental Protection Agency (EPA) RFI guidance documents and is also the most practical approach for this site where little or no information is available on past practices.

Outlined below are the minimum tasks generally required by the EPA for a RCRA investigation of a SWMU or AOC:

- Task I Description of Current Conditions
- Task II Work Plan
- Task III Facility Investigation
- Task IV Investigative Analysis
- Task V Report.

The Task I requirements for FTA2 have been addressed in the *Description of Current Conditions* (Tinker, 1992), which outlines the geology, hydrogeology, and current conditions of the site. Task II requirements have been addressed in the *Final RFI Work Plan* (CDM Federal Programs Corporation [CDM], 1992), and the Final RFI Work Plan - Amendments (IT Corporation [IT], 1993). The *Final RFI Work Plan* and the Final RFI Work Plan - Amendments include a Data Management Plan, Project Management Plan, Data Collection Quality Assurance Plan, Health and Safety Plan, and amendments as necessary to perform a





Phase I RFI. Tasks III and IV requirements, which characterize the site, determine the presence of contamination, and identify actual and potential receptors have been addressed in this report. This report also satisfies the requirements of Task V.

1.1 Purpose

This report has been prepared in response to the U.S. Department of the Air Force, Tinker AFB, Oklahoma request for a Phase I RFI and report for FTA2.

The purpose of this report is to document and present the findings of the RFI conducted at FTA2. The primary objective of the RFI was to determine if contaminant releases to the environment have occurred at the site and to determine if a more comprehensive Phase II RFI or a CMS is required. This RFI Report presents the following information:

- Site characterization (Environmental Setting)
- Source term definition (Source Characterization), if any
- Degree of contamination (Contamination Characterization)
- Identification of actual or potential receptors
- Analytical results and analysis (Data Analysis)
- Identification of groundwater protection standards and action levels for the protection of human health and the environment (Protection Standards)
- Conclusions and recommendations for future work.

This document will also describe the procedures and methods of field sampling and cite any previous investigations conducted at the site.

1.2 Scope of Investigation

The soils and the groundwater below and around FTA2 were investigated. Soil samples were taken at various depths below the site to determine the presence of subsurface soil contamination. Groundwater samples were taken from shallow and deep monitoring wells both up- and downgradient from FTA2 to determine if contamination was present in either the upper or lower aquifers.

2.0 Background

2.1 Tinker AFB Facility Description and History

Tinker AFB is located in central Oklahoma, in the southeast portion of the Oklahoma City metropolitan area, in Oklahoma County (Figure 1-1) with its approximate geographic center located at 35° 25' latitude and 97° 24' longitude (U.S. Geological Survey [USGS], 1978). The Base is bounded by Sooner Road to the west, Douglas Boulevard to the east, Interstate 40 to the north, and Southeast 74th Street to the south. An additional area east of the main Base is used by the Engineering Installation Division (EID) and is known as Area D. The Base encompasses approximately 5,000 acres.

Tinker AFB was originally known as the Midwest Air Depot and began operations in July 1941. The site was activated March 1942 and during World War II the depot was responsible for reconditioning, modifying, and modernizing aircraft, vehicles, and equipment. Tinker AFB now serves as a worldwide repair depot for a variety of aircraft, weapons, and engines. These activities require the use of hazardous materials and result in the generation of hazardous wastes. These wastes have included spent organic solvents, waste oils, waste paint strippers and sludges, electroplating wastewaters and sludges, alkaline cleaners, acids, FreonTM, jet fuels, and radium paints. Wastes that are currently generated are managed at two permitted hazardous waste storage facilities. Prior to enactment of RCRA, however, industrial wastes were discharged into unlined landfills and waste pits, streams, sewers, and ponds. Releases from these areas as well as from underground tanks have occurred. As a result, there are numerous sites of soil, groundwater, and surface water contamination on Base.

2.2 Site Description and History

FTA2 is located in the south-central portion of Tinker AFB (Figure 1-2). The site is located northwest of the control tower and north of Crutcho Creek. FTA2 was established as a temporary, unlined pit and was used infrequently between 1962 and 1966. Standard operating procedures (SOP) included adding water to the pit to saturate the soil and reduce infiltration. Fuel was then brought in by tank truck, placed on top of the water, ignited, and extinguished using water and a protein-based foam. Any residues were left in the pit to evaporate and infiltrate prior to the next fire training exercise. Records for construction, operation, or destruction do not exist, so data on composition, frequency, and quantity of fuel used is not available and it is assumed that the site was simply abandoned. The site now appears as a gently sloping grassy area with no visible signs of its past use as a fire training area. During

an IRP Response Action performed by the U.S. Army Corps of Engineers (USACE) (December 1988), soil beneath the site was analyzed for volatile organic compounds (VOC), semivolatile organic compounds (SVOC), and total metals. This investigation revealed that more information was needed concerning background concentrations of metals in the soil in this portion of Tinker AFB.

2.3 Regulatory History and Status

In 1980, Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) to address the cleanup of hazardous waste disposal sites across the country. CERCLA gave the president authority to require responsible parties to remediate the sites or to undertake response actions through use of a fund (the Superfund). The president, through Executive Order 12580, delegated the EPA with the responsibility to investigate and remediate private party hazardous waste disposal sites that created a threat to human health or the environment. The president delegated responsibility for investigation and cleanup of federal facility disposal sites to the various federal agency heads. The Defense Environmental Restoration Program (DERP) was formally established by Congress in Title 10 U.S. Code (USC) 2701-2707 and 2810. DERP provides centralized management for the cleanup of U.S. Department of Defense (DOD) hazardous waste sites consistent with the provisions of CERCLA, as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (40 Code of Federal Regulations [CFR] 300), and Executive Order 12580. To support the goals of the DERP, the IRP was developed to identify, investigate, and clean up contamination at installations.

Under the Air Force IRP, Tinker AFB began a Phase I study similar to a preliminary assessment/site investigation (PA/SI) in 1981 (Engineering Science [ES], 1982). This study helped locate 14 sites that needed further investigation. Phase II studies were performed in 1983 (Radian Corporation [Radian], 1985a).

In 1986, Congress amended CERCLA through the SARA, which waived sovereign immunity for federal facilities. SARA gave EPA authority to oversee the cleanup of federal facilities and to have the final authority for selecting the remedial action at federal facilities placed on the National Priorities List (NPL) if the EPA and the relevant federal agency cannot concur in the selection. Congress also codified the DERP (SARA Section 211), setting up a fund for the DOD to remediate its sites because the Superfund is not available for the cleanup of

federal facilities. DERP specifies the type of cleanup responses that the fund can be used to address.

In response to SARA, the DOD realigned its IRP to follow the investigation and cleanup stages of the EPA:

- PA/SI
- Remedial investigation/feasibility study (RI/FS)
- Record of Decision (ROD) for selection of a remedial action
- Remedial design/remedial action.

In 1984, Congress amended the RCRA with the Hazardous and Solid Waste Amendments (HSWA) which allow the EPA to require, as a permit condition, a facility to undertake corrective action for any release of hazardous waste or constituents from any SWMU at a treatment, storage, and disposal (TSD) facility. On January 12, 1989 Tinker AFB submitted its Part B permit application for renewal of its operating RCRA hazardous waste storage facility permit.

EPA, in the Hazardous Waste Management Permit for Tinker AFB dated July 1, 1991, identified 43 SWMUs and two AOCs on Tinker AFB that need to be addressed. This permit requires Tinker AFB to investigate all SWMUs and AOCs and to perform corrective action at those identified as posing a threat to human health or the environment. This RFI Report has been prepared to determine whether sufficient investigations have been conducted to meet the permit requirements for FTA2 and to document all findings.

2.4 Summary of Previous Investigations

An IRP Response Action was performed by the USACE (December 1988) in which soil beneath the site was analyzed for VOCs, SVOCs, and total metals. Three soil borings were drilled and soil samples were collected from the following depths: 0 to 1 foot, 1 to 4 feet, and 4 to 7 feet (total depth due to auger refusal). VOCs included the detection of methylene chloride in 8 of 11 samples and acetone in 3 of 11 samples. The only SVOC detected in 4 of 11 samples was bis(2-ethylhexyl)phthalate. Six metals including barium, cadmium, mercury, nickel, lead, and selenium were detected in samples at or above background level averages established by analyzing a total of 16 samples from four Base perimeter borings.

The investigation performed at FTA2 identified that no contamination exists at the site, but revealed that more information was needed concerning background concentrations of metals in the soil in this portion of Tinker AFB.

3.0 Environmental Setting

3.1 Topography and Drainage

3.1.1 Topography

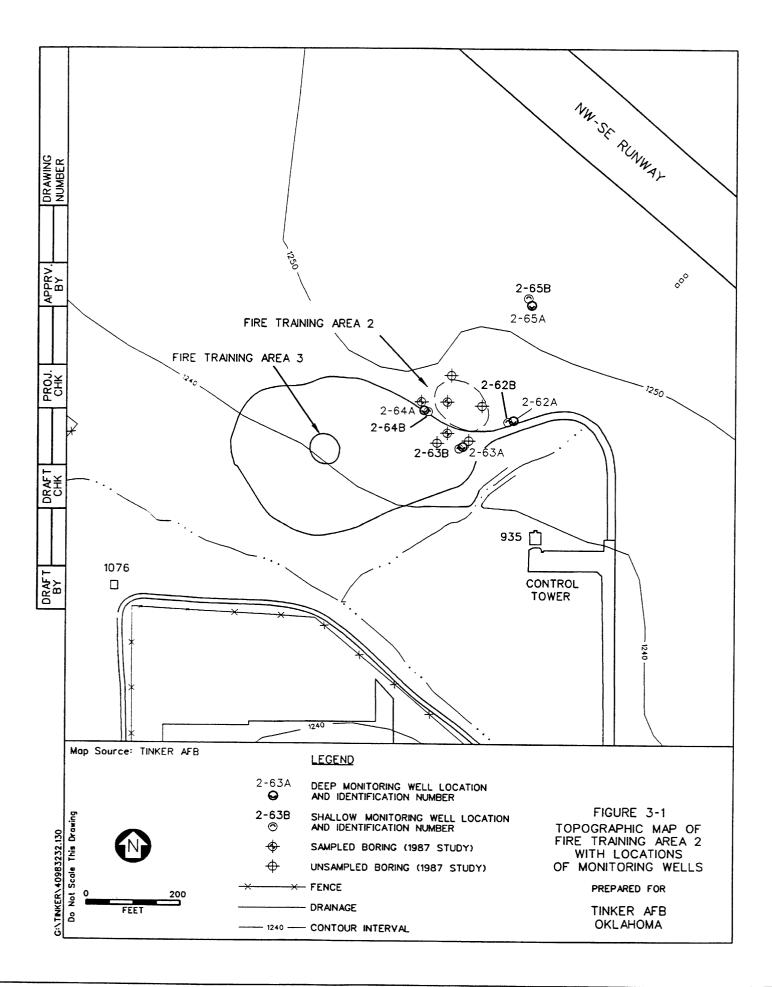
Regional/Tinker AFB. The topography of Oklahoma City and surrounding area varies from generally level to gently rolling in appearance. Local relief is primarily the result of dissection by erosional activity or stream channel development. At Oklahoma City, surface elevations are typically in the range of 1,070 to 1,400 feet mean sea level (msl). At Tinker AFB ground surface elevations vary from 1,190 feet msl near the northwest corner where Crutcho Creek intersects the Base boundary to approximately 1,320 feet msl at Area D (EID), located on 59th Street, east of the main installation.

Site. In the vicinity of FTA2 the topography slopes gently to the southwest, away from the air field runways and toward Crutcho Creek (Figure 3-1). The sloping topography is modified by the incised channel of a southwest-flowing tributary to Crutcho Creek. The channel of this tributary is approximately 5 to 10 feet below the grade of the surrounding terrain.

3.1.2 Drainage

Regional/Tinker AFB. Drainage of Tinker AFB land areas is accomplished by overland flow of runoff to diversion structures and thence to area surface streams, which flow intermittently. The northeast portion of the Base is drained primarily by tributaries of Soldier Creek. The north and west sections of the Base including the main instrument runway, drain to Crutcho Creek, a tributary of the North Canadian River. Two small unnamed intermittent streams crossing installation boundaries south of the main instrument runway generally do not receive significant quantities of Base runoff due to site grading designed to preclude such drainage. These streams, when flowing, extend to Stanley Draper Lake, approximately one-half mile south of the Base.

Site. Surface waters in the area of FTA2 drain by overland flow to the southwest toward Crutcho Creek, which flows to the northwest. In a part of the area around SWMU-8, overland flow is toward a southwest-draining tributary to Crutcho Creek (Figrue 3-1). The



southwest-draining tributary emerges from a culvert located approximately 200 feet east of the SWMU. The tributary drains an area on the east side of the airfield occupied by industrial facilities.

3.2 Geology

3.2.1 Regional/Tinker AFB Geology

Tinker AFB is located within the Central Redbed Plain Section of the Central Lowland Physiographic Province, which is tectonically stable. No major fault or fracture zones have been mapped near Tinker AFB. The major lithologic units in the area of the Base are relatively flat-lying and have a regional westward dip of about 0.0076 foot per foot (ft/ft) (Bingham and Moore, 1975).

Geologic formations that underlie Tinker AFB include, from oldest to youngest, the Wellington Formation, Garber Sandstone, and the Hennessey Group; all are Permian in age.

All geologic units immediately underlying Tinker AFB are sedimentary in origin. The Garber Sandstone and Wellington Formation are commonly referred to as the Garber-Wellington Formation due to strong lithologic similarities. These formations are characterized by fine-grained, calcareously-cemented sandstones interbedded with shale. The Hennessey Group consists of the Fairmont Shale and the Kingman Siltstone. It overlies the Garber-Wellington Formation along the eastern portion of Cleveland and Oklahoma counties. Quaternary alluvium is found in many undisturbed streambeds and channels located within the area.

Stratigraphy. Tinker AFB lies atop a sedimentary rock column composed of strata that ranges in age from Cambrian to Permian above a Precambrian igneous basement. Quaternary alluvium and terrace deposits can be found overlying bedrock in and near present-day stream valleys. At Tinker AFB, Quaternary deposits consist of unconsolidated weathered bedrock, fill material, windblown sand, and interfingering lenses of sand, silt, clay, and gravel of fluvial origin. The terrace deposits are exposed where stream valleys have downcut through older strata and have left them topographically above present-day deposits. Alluvial sediments range in thickness from less than a foot to nearly 20 feet.

Subsurface (bedrock) geologic units that outcrop at Tinker AFB and are important to understanding groundwater and contaminant concerns at the Base consist of, in descending order: the Hennessey Group, the Garber Sandstone, and the Wellington Formation (Table 3-1). These bedrock units were deposited during the Permian age (230 to 280 million years ago) and are typical of redbed deposits formed during that period. The units are composed of a conformable sequence of sandstones, siltstones, and shales. Individual beds are lenticular and vary in thickness over short horizontal distances. Because lithologies are similar and because of a lack of fossils or key beds, the Garber Sandstone and the Wellington Formation are difficult to distinguish and are often informally lumped together as the Garber-Wellington Formation. Together, they are about 900 feet thick at Tinker AFB. The interconnected, lenticular nature of sandstones within the sequence forms complex pathways for groundwater movement.

The surficial geology of the north section of the Base is dominated by the Garber Sandstone, which outcrops across a broad area of Oklahoma County. Generally, the Garber outcrop is covered by a thin veneer of soil and/or alluvium up to 20 feet thick. To the south, the Garber Sandstone is overlain by outcropping strata of the Hennessey Group including the Kingman Siltstone and the Fairmont Shale (Bingham and Moore, 1975). Drilling information obtained as a result of geotechnical investigations and monitoring well installation confirms the presence of these units.

Depositional Environment. The Permian-age strata presently exposed at the surface in central Oklahoma were deposited along a low-lying north-south oriented coastline. Land features included meandering to braided sediment-loaded streams that flowed generally westward from highlands to the east (ancestral Ozarks). Sand dunes were common as were cut-off stream segments that rapidly evaporated. The climate was arid and vegetation sparse. Offshore the sea was shallow and deepened very gradually to the west. The shoreline's position varied over a wide range. Isolated evaporitic basins frequently formed as the shoreline shifted.

Across Oklahoma, this depositional environment resulted in an interfingering collage of fluviatile and windblown sands, clays, shallow marine shales, and evaporite deposits. The overloaded streams and evaporitic basins acted as sumps for heavy metals such as barium, chromium, iron, and lead. Oxidation of iron in the arid climate resulted in the reddish color

Table 3-1

Major Geologic Units in the Vicinity of Tinker AFB (Modified from Wood and Burton, 1968) Tinker AFB

(Page 1 of 2)

Water-Bearing Properties	Moderately permeable. Yields small to moderate quantities of water in valleys of larger streams. Water is very hard, but suitable for most uses, unless contaminated by industrial wastes or oil field brines.	Moderately permeable. Locally above the water table and not saturated. Where deposits have sufficient saturated thickness, they are capable of yielding moderate quantities of water to wells. Water is moderately hard to very hard, but less mineralized than water in other aquifers. Suitable for most uses unless contaminated by oil field brines.
Description and Distribution	Unconsolidated and interfingering lenses of sand, silt, clay, and gravel in the flood plains and channels of stream	Unconsolidated and interfingering lenses of sand, silt, gravel, and clay that occur at one or more levels above the flood plains of the principal streams.
Thickness (feet)	0-70	0-100
Stratigraphic Unit	Alluvium	Terrace deposits
Series	d ¬ш− о ⊢ о о ш z ш	< Z ○
System	О⊃∢⊢шш	Z∢α≻

Table 3-1

(Page 2 of 2)

·	1		
Water-Bearing Properties	Poorly permeable. Yields meager quantities or very hard, moderately to highly mineralized water to shallow domestic and stock wells. In places water contains large amounts of sulfate.	Poorly to moderately permeable. Important source of groundwater in Cleveland and Oklahoma counties. Yields small to moderate quantities of water to deep wells; heavily pumped for industrial and municipal uses in the Norman and	Midwest City areas. Water from shallow wells hard to very hard; water from deep wells moderately hard to soft. Lower part contains water too salty for domestic and most industrial uses.
Description and Distribution	Deep-red clay shale containing thin beds of red sandstone and white or greenish bands of sandy or limey shale. Forms relatively flat to gently rolling grass-covered prairie.	Deep-red clay to reddish-orange, massive and cross-bedded fine-grained sandstone interbedded and interfingered with red shale and siltstone	Deep-red to reddish-orange massive and cross-bedded fine-grained sandstone interbedded with red, purple, maroon, and gray shale. Base of formation not exposed in the area.
Thickness (feet)	700	200 1	500 <u>+</u>
Stratigraphic Unit	Hennessey Group (includes Kingman Siltstone and Fairmont Shale)	Garber Sandstone	Wellington Formation
Series	о≽шк сшк∑	- ∢ Z	
System	υшα∑−∢z		

of many of the sediments. Erosion and chemical breakdown of granitic rocks from the highlands result in extensive clay deposits. Evaporite minerals such as anhydrite (CaSO₄), barite (BaSO₄), and gypsum (CaSO₄•2H₂O) are common.

Around Tinker AFB, the Hennessey Group represents deposition in a tidal flat environment cut by shallow, narrow channels. The Hennessey Group comprises predominantly red shales, which contain thin beds of sandstone (less than 10 feet thick) and siltstone. In outcrops, "mudball" conglomerates, burrow surfaces, and desiccation cracks are recognized. These units outcrop over roughly the southern half of the Base, thickening to approximately 70 feet in the southwest from their erosional edge (zero thickness) across the central part of Tinker AFB.

In contrast, the Garber Sandstone and Wellington Formation around Tinker AFB consist of an irregularly interbedded system of lenticular sandstones, siltstones, and shales deposited either in meandering streams in the upper reaches of a delta or in a braided stream environment. Outcrop units north of Tinker AFB exhibit many small to medium channels with cut and fill geometries consistent with a stream setting. Sandstones are typically cross-bedded. Individual beds range in thickness from a few inches to about 50 feet and appear massive, but thicker units are often formed from a series of "stacked" thinner beds. Geophysical and lithologic well logs indicate that from 65 to 75 percent of the Garber Sandstone and the Wellington Formation are composed of sandstone at Tinker AFB. The percentage of sandstone in the section decreases to the north, south, and west of the Base. These sandstones are typically fine to very fine grained, friable, and poorly cemented. However, where sandstone is cemented by red muds or by secondary carbonate or iron cements, local thin "hard" intervals exist along disconformities at the base of sandstone beds. Shales are described as ranging from clayey to sandy, are generally discontinuous, and range in thickness from a few inches to about 40 feet.

Stratigraphic Correlation. Correlation of geologic units is difficult due to the discontinuous nature of the sandstone and shale beds. However, cross sections demonstrate that two stratigraphic intervals can be correlated over most of the Base in the conceptual model. The location of these cross sections is shown in Figure 3-2. These intervals are represented on geologic cross-sections A-A' and B-B' in Figures 3-3 and 3-4. Section A-A' is roughly a dip section and B-B' is approximately a strike section. The first correlatable interval is marked by the base of the Hennessey Group and the first sandstone at the top of the Garber Sandstone. This interval is mappable over the southern half of Tinker AFB. The second interval

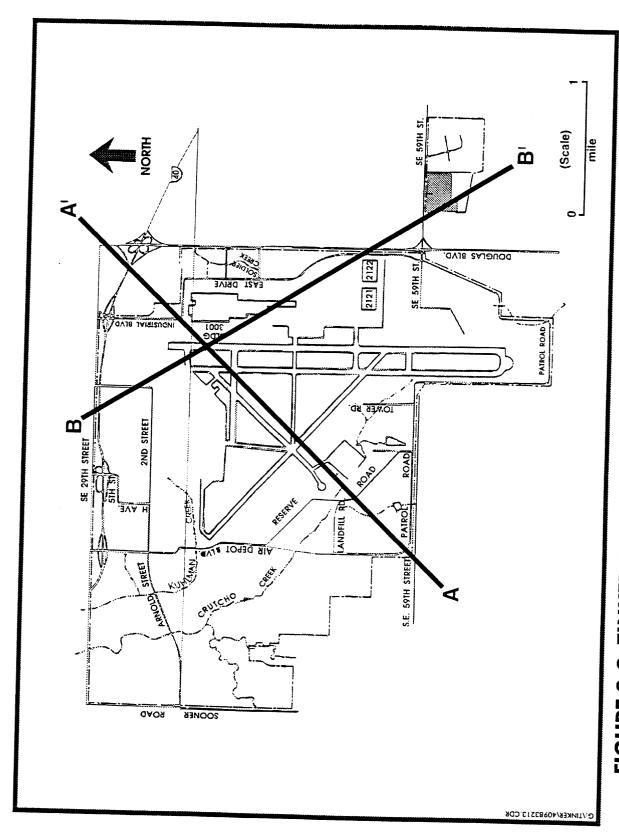


FIGURE 3-2 TINKER AFB GEOLOGIC CROSS SECTION LOCATION MAP

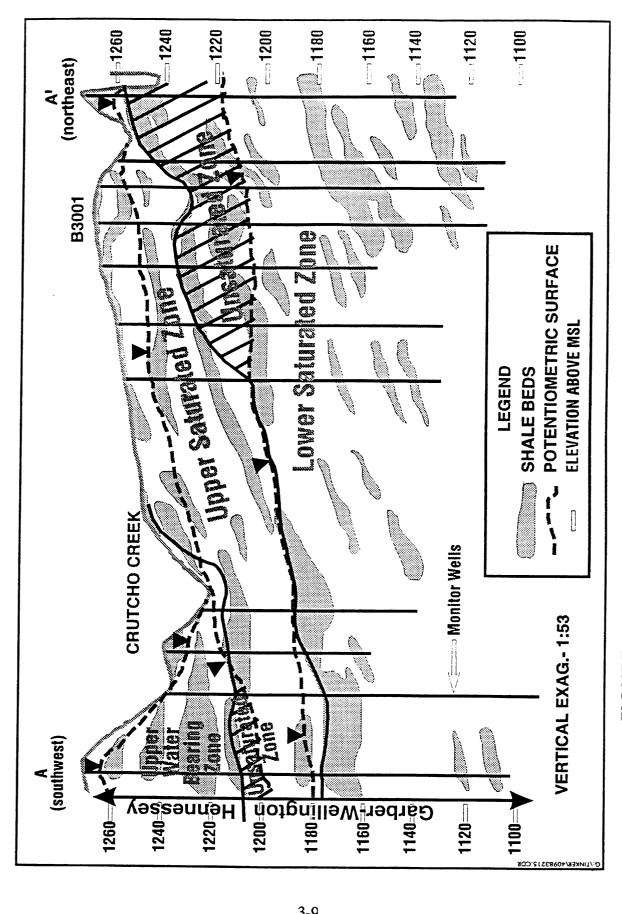
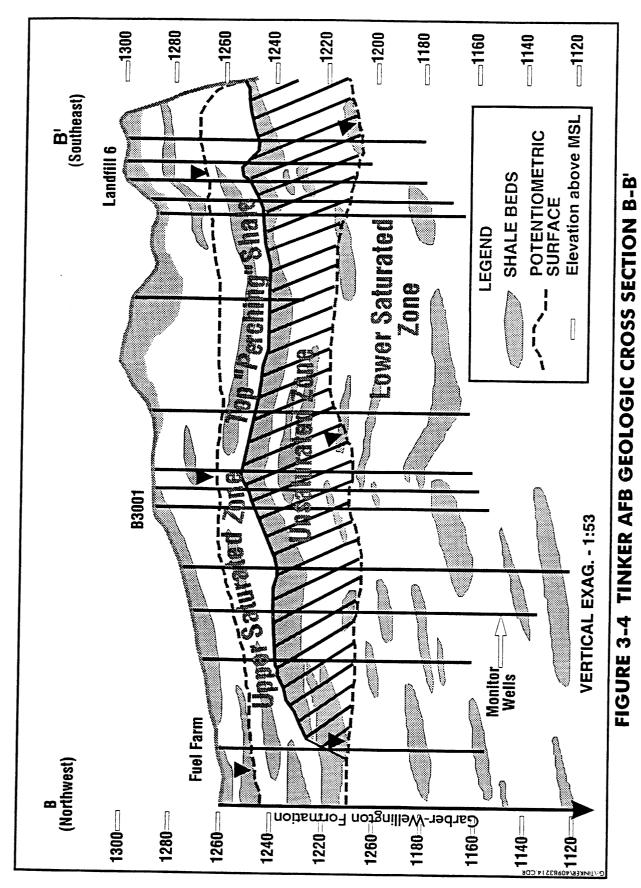


FIGURE 3-3 TINKER AFB GEOLOGIC CROSS SECTION A-A'



3-10

consists of a shale zone within the Garber Sandstone, which, in places, comprises a single shale layer and in other places multiple shale layers. This interval is more continuous than other shale intervals and in cross sections appears mappable over a large part of the Base. It is extrapolated under the central portion of Tinker AFB where little well control exists.

Structure. Tinker AFB lies within a tectonically stable area; no major near-surface faults or fracture zones have been mapped near the Base. Most of the consolidated rock units of the Oklahoma City area dip westward at a low angle. A regional dip of 0.0057 to 0.0076 ft/ft in a generally westward direction is supported by stratigraphic correlation on geologic cross sections at Tinker AFB. Bedrock units strike slightly west of north.

Although Tinker AFB lies in a tectonically stable area, regional dips are interrupted by buried structural features located west of the Base. A published east to west generalized geologic cross section, which includes Tinker AFB supports the existence of a northwest trending structural trough or syncline located near the western margin of the Base. The syncline is mapped adjacent to and just east of a faulted anticlinal structure located beneath the Oklahoma City Oil Field. The fault does not appear to offset Permian-age strata. There are indications that the syncline may act as a "sink" for some regional groundwater (southwest flow) at Tinker AFB before it continues to more distant discharge points.

3.2.2 Site Geology

Soil borings were completed at four locations at FTA2. The borings extended to depths between 67 and 79 feet. Geophysical logs, natural gamma, self potential (SP), resistivity, and caliper logs were run in the borings. Monitoring wells were also installed at each of the soil boring locations. Figure 4-1 shows the soil boring locations. Figure 5-2 is a geologic cross section illustrating the subsurface stratigraphy at FTA2. FTA2 is located within the outcrop area of the Hennessey Group. The soil borings encountered the underlying Garber-Wellington Formation. Site geology is discussed further in Chapter 5.0.

3.3 Hydrology

3.3.1 Regional/Tinker AFB Hydrology

The most important source of potable groundwater in the Oklahoma City metropolitan area is the Central Oklahoma aquifer system. This aquifer extends under much of central Oklahoma and includes water in the Garber Sandstone and Wellington Formation, the overlying alluvium and terrace deposits, and the underlying Chase, Council Grove, and Admire Groups. The

Garber Sandstone and the Wellington Formation portion of the Central Oklahoma aquifer system is commonly referred to as the "Garber-Wellington aquifer" and is considered to be a single aquifer because these units were deposited under similar conditions and because many of the best producing wells are completed in this zone. On a regional scale, the aquifer is confined above by the less permeable Hennessey Group and below by the Late Pennsylvanian Vanoss Group.

Tinker AFB lies within the limits of the Garber-Wellington groundwater basin. Presently, Tinker AFB derives most of its water supply from this aquifer and supplements the supply by purchasing water from the Oklahoma City Water Department. The nearby communities of Midwest City and Del City derive water supplies from both surface sources and wells tapping the aquifer. Industrial operations, individual homes, farm irrigation, and small communities not served by a municipal distribution system also depend on the Garber-Wellington aquifer. Communities presently depending upon surface supplies such as Oklahoma City also maintain a well system drilled into the Garber-Wellington aquifer as a standby source of water in the event of drought.

Recharge of the Garber-Wellington aquifer is accomplished principally by percolation of surface waters crossing the area of outcrop and by rainfall infiltration in this same area. Because most of Tinker AFB is located in an aquifer outcrop area, the Base is considered to be situated in a recharge zone.

According to Wood and Burton (1968) and Wickersham (1979), the quality of groundwater derived from the Garber-Wellington aquifer is generally good, although wide variations in the concentrations of some constituents are known to occur. Wells drilled to excessive depths may encounter a saline zone, generally greater than 900 feet below ground surface. Wells drilled to such depths or those accidentally encountering the saline zone are either grouted over the lowest screens or may be abandoned.

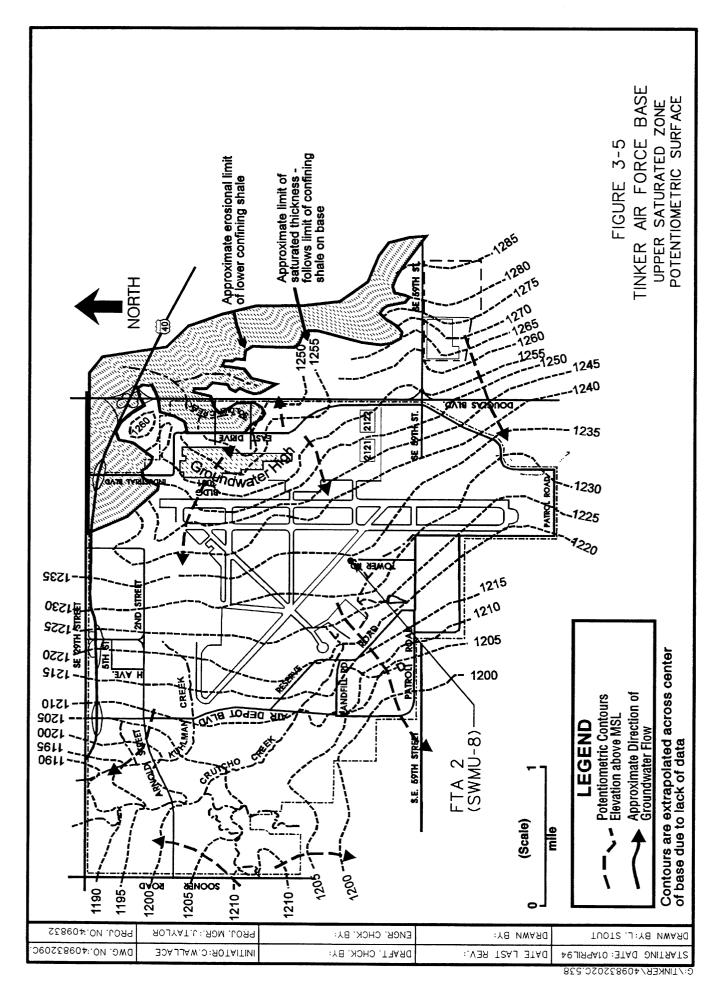
Tinker AFB presently obtains its water supplies from a distribution system comprised of 29 water wells constructed along the east and west Base boundaries and by purchase from the Oklahoma City Water Department. All Base wells are finished into the Garber-Wellington aquifer. Base wells range from 700 to 900 feet in finished depth, with yields ranging from 205 to 250 gallons per minute. The wells incorporate multiple screens, deriving water supplies from sand zones with a combined thickness from 103 to 184 feet (Wickersham, 1979).

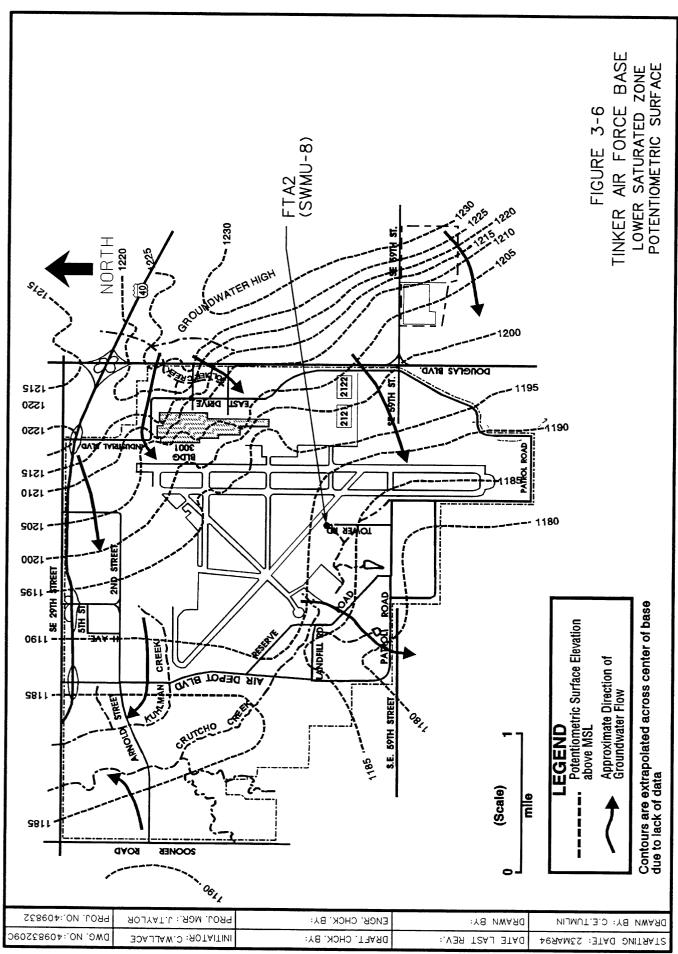
Conceptual Hydrologic Model. The hydrologic conceptual model of Tinker AFB involves a comprehensive review of available data, including those from direct measurement sources (borings, water level measurements, pump/slug tests, stream studies) as well as indirect sources (aerial photographs, topographic maps, published reports). The hydrologic system at Tinker AFB is complex, but the model provides both an approximation of depth to water and an estimated direction of groundwater movement and is therefore useful as a basis for designing field investigations. As information is derived from investigations, the model is continually updated and refined.

Groundwater. As a result of ongoing environmental investigations and the approximately 450 groundwater monitoring wells installed on the Base during various investigations, a better understanding of the specific hydrological framework has emerged. The current conceptual model developed by Tinker AFB (Tinker, 1993), based on the increased understanding of the hydrological framework, has been revised from a previous model adopted by the U.S. Army Corps of Engineers (USACE). Previous studies reported that groundwater was divided into four water bearing zones: the perched aquifer, the top of regional aquifer, the regional aquifer, and the producing zone. In the current model, two principal water table aquifer zones and a third less extensive zone have been identified. The third is limited to the southwest quadrant. The third aquifer zone consisted of saturated siltstone and thin sandstone beds in the Hennessey Shale and equates to the upper water bearing zone (UWBZ) described by the USACE at Landfills 1 through 4 (SWMUs-3 through -6). In addition, numerous shallow, thin saturated beds of siltstone and sandstone exist throughout the Base. These beds are of limited areal extent and are often perched.

In the current conceptual hydrologic model by Tinker AFB, an upper saturated zone (USZ) and a lower saturated zone (LSZ) are recognized in the interval from ground surface to approximately 200 feet. Below this depth is found the producing zone from which the Base draws much of its water supply. Figure 3-5 shows the potentiometric surface for the USZ and Figure 3-6 shows the potentiometric surface for the LSZ. The USZ exists under water table (unconfined) conditions, but may be partially confined locally. Conditions in the LSZ are difficult to determine due to screen placement and overlie long sand packs below the screen interval.

The USZ is found at a depth of 5 to 70 feet below ground surface and has a saturated thickness ranging from less than 1 foot at its eastern boundary to more than 20 feet in places west of Building 3001. The USZ is erosionally truncated by Soldier Creek along the





northeastern margin of Tinker AFB. This aquifer zone is considered to be a perched aquifer over the eastern one-third of Tinker AFB, where it is separated from the LSZ by an underlying confining shale layer and a vadose zone. The confining interval extends across the entire Base, but the vadose zone exists over the eastern one-third of this area. The available hydrologic data indicate that the vadose zone does not exist west of a north-south line located approximately 500 to 1,000 feet west of the main runway; consequently, the USZ is not perched west of this line. However, based on potentiometric head data from wells screened above and below the confining shale layer, the USZ remains a discrete aquifer zone distinct from the LSZ even over the western part of the Base. In areas where several shales interfinger to form the lower confining interval rather than a single shale bed, "gaps" may occur. In general, these gaps are not holes in the shale but are places where multiple shales exist that are separated by slightly more permeable strata. Hydrologic data from monitoring wells indicate that these zones allow increased downward flow of groundwater above what normally leaks through the confining layer.

The LSZ is hydraulically interconnected and can be considered one aquifer zone down to approximately 200 feet. This area includes what was referred to by the USACE as the top of regional and regional zones. Hydrologic data from wells screened at different depths at the same location within this zone, however, provide evidence that locally a significant vertical (downward) component of groundwater flow exists in conjunction with lateral flow. The magnitude of the vertical component is highly variable over the Base. Preliminary evidence suggests that the LSZ is hydraulically discrete from the producing zone. Due to variations in topography the top of the lower zone is found at depths ranging from 50 to 100 feet below ground surface under the eastern parts of the Base and as shallow as 30 feet to the west. Differences in potentiometric head values found at successive depths are due to a vertical (downward) component of groundwater flow in addition to lateral flow and the presence or absence of shale layers that locally confine the aquifer system. The LSZ extends east of the Base (east of Soldier Creek) beyond the limits of the USZ where it becomes the first groundwater zone encountered in off-Base wells. Because of the regional dip of bedding, groundwater gradient, and topography, the LSZ just east of the Base is generally encountered at depths of less than 20 feet.

Across the central portion of Tinker AFB, the unsaturated zone separating the USZ and LSZ disappears where the intervening shale layer dips below the surface of the LSZ. The disappearance of the unsaturated zone is supported by data from recently completed wells just west of the north-south runway and near Base Operations and by data from wells in the southwest

portion of the Base. Measured water levels in two of the new wells show that the LSZ is confined at these locations by the shale separating the USZ and LSZ. No unsaturated interval is present.

To the southwest, measured water levels from wells screened in the Garber Sandstone at Landfills 2 and 4, SWMUs-4 and -6, which correspond in the conceptual model to the USZ under the east part of the Base, show that the USZ remains unconfined or is partially confined. This zone is essentially the first water level encountered in the Garber Sandstone on the Base. Potentiometric data from wells in the southwest screened in deeper intervals, that correspond roughly to the LSZ to the east indicate that the LSZ is confined in this area. Data from wells screened at various intervals to a depth of about 90 feet in this area also show that no vadose (unsaturated) zone separates the USZ from the rest of the aquifer. The upper and lower zones cannot be distinguished in this area except by correlating geologic units across Base.

Farther to the southwest of the landfills, near the edge of the Base, another unsaturated zone is found separating groundwater in the Hennessey Group from the Garber-Wellington aquifer. This unsaturated zone is not continuous with that encountered on the east side of the Base. The groundwater in the overlying Hennessey water bearing zone represents the third groundwater zone of more limited areal extent mentioned previously. This shallow unconfined aquifer system is located on a topographic high (groundwater divide) in the strata of the Hennessey Group. Radial flow of groundwater off the divide toward nearby tributaries of Crutcho Creek is suggested from limited water level measurements. Additional shallow perched saturated zones of limited areal extent are thought to exist in other sandstone and siltstone beds within the Hennessey water bearing zone. Along the western margin of Tinker AFB west of Crutcho Creek, the shallow groundwater in the Hennessey water bearing zone and probably groundwater in the most shallow saturated zones in the Garber-Wellington aquifer appears to flow toward stream tributaries, and therefore, does not follow regional flow patterns to the west/southwest.

The aquifer zones in the conceptual model are hydraulically connected, although sometimes only to a very local extent, either directly as in the west part of the Base or indirectly through leakage and/or recharge patterns related to local streams. Because Tinker AFB is located in a recharge zone for the Central Oklahoma aquifer both horizontal and vertical (downward) components of groundwater flow exist. Measured potentiometric levels from well clusters with screens and filter packs placed at varying depths within the LSZ show that hydraulic

heads decrease with depth and that the magnitude of the vertical component of flow varies with location. This finding is particularly important to recognize where data from these wells are being used to generate potentiometric contour maps.

Although the variability in the geology and the recharge system at Tinker AFB makes it difficult to predict local flow paths, Central Oklahoma aquifer water table data taken from the 1992 USGS Hydrologic Atlas show that regional groundwater flow under Tinker AFB varies from west/northwest to southwest depending on location. This finding is supported by contoured potentiometric data from Base monitoring wells, which show groundwater movement in the upper aquifer zones to generally follow regional dip. Measured normal to potentiometric contours, groundwater flow gradients range from 0.0019 to 0.0057 ft/ft. However, because flow in the near surface portions of the aquifer at Tinker AFB is strongly influenced by topography, local stream-based levels, complex subsurface geology and location in a recharge area, both direction and magnitude of groundwater movement is highly variable. The interaction of these factors not only influences regional flow, but gives rise to complicated local, often transient, flow patterns at individual sites.

Several examples demonstrate this variability. Historical water level data around Crutcho Creek indicate that groundwater flow in that area is predominantly to the southwest. However, during high flow conditions bank recharge occurs and shallow local flow patterns near the creek may be reversed. This pattern is probably in effect at other streams as well. In the northeast quadrant of the Base, several factors contribute to groundwater "mounding" in the USZ and to formation of a groundwater high in the LSZ. This mounding leads to radial or semiradial groundwater flow at shallow depths. Finally, in the northeast part of the Base where sufficient data exist, comparison of potentiometric contours from successively deeper levels in the LSZ suggests that groundwater flow directions change with depth, gradually turning from west/southwest to northwest. This change in regional flow is attributed either to effects of pumping from deep water supply wells in the area and/or to the presence of the Deep Fork River located to the north. This river, along with the Canadian River south of Tinker AFB, has been demonstrated by the USGS to act as a major discharge point for regional groundwater in Central Oklahoma.

Surface Water. The interaction of surface water with groundwater is an important factor in predicting local groundwater flow patterns at Tinker AFB. Although no technical stream study data are presently available to determine what degree of interaction occurs between streams and groundwater, some qualitative observations provide clues to the importance of

this system. The direction of stream flow on Tinker AFB appears to be controlled largely by a topographic divide that extends from southwest to northeast across the south part of the Base. Streams that originate on the north side of the divide flow to the north, including Soldier Creek, Crutcho Creek, and Kuhlman Creek. Elm Creek, which has its origin on the southeast side, flows to the south. Streams that flow northward become perennial before leaving the Base and with no other constant source of water available are considered to be recharged by the aquifer (gaining streams). Some data indicate, however, that these streams become dry north of the Base during periods of lower precipitation and lose water to the aquifer (losing streams). Information from wells and piezometers near the ponded section of Soldier Creek at the industrial wastewater treatment plant also suggests that the pond contributes to the groundwater (a losing stream) in the LSZ at that location. Portions of Soldier Creek tributaries (near their headwaters, off-Base) flow only intermittently and probably recharge the aquifer through infiltration during periods of higher precipitation. Finally, where groundwater and stream elevations are the same, the observed direction of groundwater flow may be affected by transient factors such as bank storage from periods of increased precipitation.

Man-Made Structures. In the conceptual model of Tinker AFB, it is recognized that man-made features such as buried utilities (storm drains, waste lines) may further complicate the shallow groundwater situation. An additional problem encountered in generating the model involves improper monitoring well construction practices, which not only may contribute preferred pathways for groundwater (and contaminant) movement where wells have multiple screens or overlie long filter packs, but also often provide nonrepresentative, biased groundwater, and sample data.

The complex groundwater system at Tinker AFB makes correct placement and construction of monitoring and extraction wells critical. A good understanding of the conceptual hydrologic framework is essential to obtain representative data and to minimize errors. An integrated hydrologic conceptual model provides an overview of the groundwater system and leads in turn to more effective site project management.

3.3.2 Site Hydrology

Wells were installed in both the USZ and the LSZ at FTA2. The elevations of the potentiometric surface of the USZ at the site range from 1231.64 feet above msl at monitoring well (MW) 2-63B to 1234.53 feet above msl at MW2-65B, the upgradient well (Figure 5-3). The

hydraulic gradient is approximately 0.0076 ft/ft. The general groundwater flow direction is approximately south-southwest towards Crutcho Creek.

Elevations of the potentiometric surface of the LSZ at the site range from 1187.94 feet above msl at MW2-64A to 1190.18 feet above msl at MW2-65A, the upgradient well (Figure 5-4). The hydraulic gradient is approximately 0.0078 ft/ft. The general groundwater flow direction is to the southwest. Site hydrology is discussed further in Chapter 5.0.

3.4 Soils

The surface soils of Tinker AFB have been studied by the U.S. Department of Agriculture (USDA), Soil Conservation Service (1969) and by several soil boring projects conducted for geotechnical (foundation construction) investigations. Surface soils of the installation area are predominantly of two basic types: residual and alluvial. The three major soil associations (Table 3-2) mapped within installation limits are Darrell-Stephenville, Renfrow-Vernon-Bethany, and Dale-Canadian-Port. The residual soils associations, Darrell-Stephenville and Renfrow-Vernon-Bethany are the products of the weathering of underlying bedrock. The alluvial materials of the Dale-Canadian-Port association are stream-deposited silts and sands, which are typically restricted to floodplains of area streams.

Table 3-2

Tinker AFB Soil Associations
(Source: USDA, 1969)

Association	Description	Thickness (in.)	Unified Classification ^a	Permeability (in./hr)
Darrell-Stephenville: loamy soils of wooded uplands	Sandy loam Sandy clay loam Soft sandstone (Garber Sandstone)	12-54	SM,ML,SC	2.0-6.30
Renfrow-Vernon-Bethany: loamy and clayey soils on prairie uplands	Silt loam - clay Clay loam Shale (Fairmont Shale)	12-60	ML,CL,MH,CH	<0.60-0.20
Dale-Canadian-Port: loamy soil on low benches near large streams	Fine sandy loam Silty clay loam Loam Clay loam	12-60	SM,ML,CL	0.05-6.30

^aUnified classifications defined in U.S. Bureau of Reclamation, 5005-86.

4.0 Description of Investigative Methods

The Phase I field investigation of the subsurface conditions at FTA2 was conducted from October through December 1993. All activities conducted during the field investigation program were performed in accordance with the Work Plan, the Data Management Plan, the Data Collection Quality Assurance Plan, the Health and Safety Plan, and their Amendments (IT, 1993b). As a Phase I investigation, field activities were designed to provide information on subsurface lithologies and the existence and nature of contamination, if any, in the soils and/or groundwater beneath FTA2. Recommendations for further investigation are contained in Chapter 9.0. Field investigation activities described in the following sections included, but were not limited to, subsurface soil sampling followed by monitoring well installation and groundwater sampling (Table 4-1). A total of eight monitoring wells, four shallow and four deep, were installed at the site (Figure 4-1). In addition, a deep (100-foot) pilot hole was drilled at one of the sites.

4.1 Shallow Monitoring Well Installation

Four shallow monitoring wells were installed in the aquifer (USZ) to determine the existence and degree, if any, of groundwater contamination in the uppermost aquifer attributable to activities at this former fire training area. Groundwater flow at FTA2 was presumed to be toward the southwest based upon the Tinker AFB potentiometric surface maps for the USZ and LSZ (Figures 3-5 and 3-6). In addition, FTA2 lies north and northeast of Crutcho Creek and an unnamed tributary, respectively (Figure 4-1) which probably serve as discharge points for shallow groundwater intersecting the stream channels during low flow periods. However, during periods of high flow, this gradient could temporarily be reversed in the vicinity of the creeks due to bank recharge causing groundwater to flow in a northerly direction.

To establish background constituent levels shallow MW2-65B was placed upgradient, approximately 200 feet north-northeast of FTA2 (Figure 4-1). This upgradient location is a sufficient distance from the creek not to be affected by any localized shifts in groundwater flow due to bank recharge. Three shallow monitoring wells (MW2-62B, MW2-63B, and MW2-64B) were placed downgradient from FTA2 to the southeast, south, and southwest, respectively. Comparing analytical results from the upgradient well with results from the three downgradient wells makes it possible to determine whether constituents from this former fire training area are migrating into and adversely impacting the USZ.

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Phenols - EPA Method 9066

Fire Training Area 2 Summary of RFI Field Activities Table 4-1

		Cumulative	Average	No. of Sa	No. of Samples Collected for Chemical Analysis	sted for Ch	emical An	alysis		
Type of Activity	Number of Locations	Footage of Borings/Wells	Footage per Boring/Well	Normal Samples	Duplicates	Rinsates	Field Blanks	Totals	Analyses Performed	Geotechnical ¹ Samples
Shallow Monitoring Well Installation	4	144	36.0	0	0	0	0	0	VOCs, SVOCs, Metals,	0
Deep Monitoring Well Installation	4	291	72.8	21	-	-	0	23	VOCs, SVOCs, Metals	2
Stratigraphic Pilot Boring	-	100	100	0	0	0	0	0	VOCs, SVOCs, Metals	0
TOTALS	Ø.	535	n/a	21	1	Ţ	0	23		2
Shallow Well Groundwater Sampling	4	n/a	n/a	4	-	0	-	9	VOCs, SVOCs, TOCs, TPH, Metals, Inorganic Parameters, COD, Phenols	n/a
Deep Well Groundwater Sampling	4	n/a	n/a	4	0	0	0	4	VOCs, SVOCs, TOCs, TPH, Metals, Inorganic Parameters, COD, Phenols	n/a
TOTALS	8	n/a	n/a	8	_	0	-	10		n/a

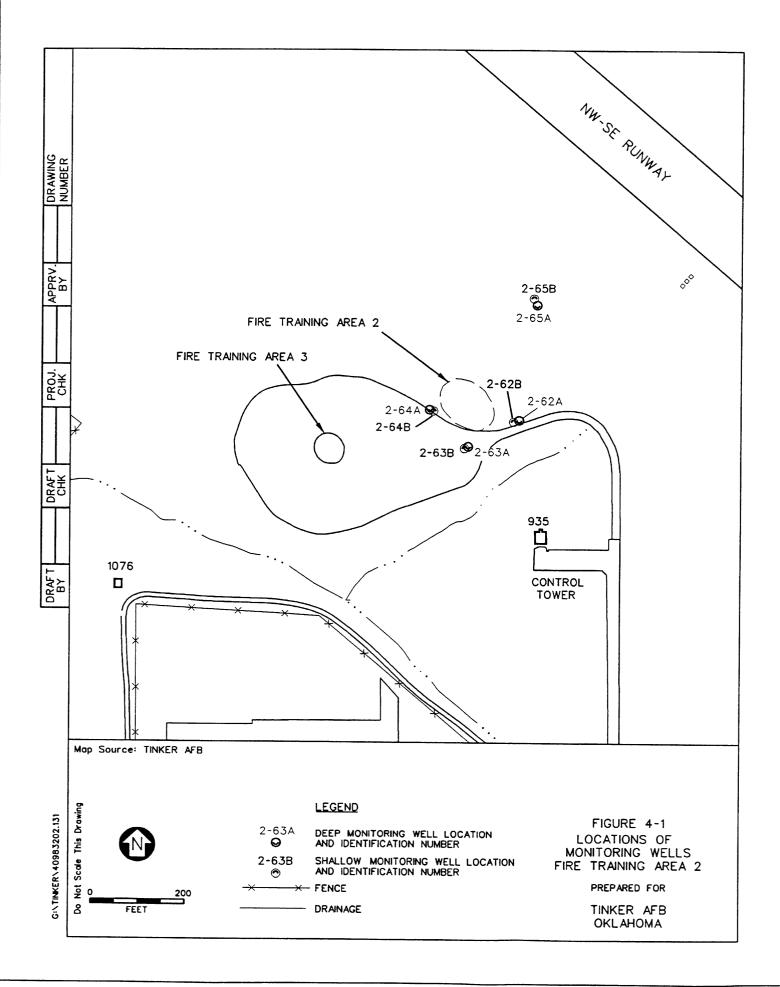
Geotechnical analysis included grain size distribution, moisture content, cation exchange capacity, and vertical permeability. VOCs - Volatile Organic Compounds - EPA Method 8240

SVOCs - Semivolatile Organic Compounds - EPA Method 8270 Metals - EPA Method 6010-Al, Ag, As (EPA Method 7060), Ba, Be, Cd, Cr, hexavalent Cr (EPA Method 7196), Cu, Fe, Pb (EPA Method 7421), Ni, Zn, and Hg (EPA Method 7471)

TPH - Total Petroleum Hydrocarbon - EPA Method 418.1/9071

TOCs - Total Organic Carbon - EPA Method 415.1

Inorganic Parameters - PO4, SO4, CI, Si, Alkalinity, Total Dissolved Solids, Total Suspended Solids, Nitrate/Nitrite, Total Kjeldahl Nitrogen (TKN), Ca, Mg, Mn, Na, K COD - Chemical Oxygen Demand - EPA Method 410.1



Boreholes for the shallow monitoring wells were advanced with hollow-stem augers. Conditions permitting, boreholes were sampled continuously for lithologic purposes with 5-foot tube samplers. Upon encountering harder strata resulting in auger refusal, the continuous tube sampler was exchanged for a center bit making it possible to advance borings through less penetrable materials. Analytical samples were not collected from shallow monitoring well borings as they were drilled adjacent to the deep monitoring well borings which were analytically sampled.

Generally, once boreholes had been advanced to a target depth, augers were removed and geophysical logs run in the open hole to determine optimal well settings. The geophysical log suite included natural gamma, spontaneous-potential, and resistivity of the formation along with the caliper of the borehole. In some instances, borehole collapse prevented removal of the augers in which case only a natural gamma run could be made through the augers. Screen intervals were recommended based upon interpretation of geophysical and lithologic logs and were subject to final approval by the Tinker AFB project manager. Overdrilled boreholes were then replugged with bentonite chips or pellets to the depth at which well installation would begin.

After the borehole had been plugged back to the desired depth, the 2-inch stainless steel well string was lowered down hole. To prevent bowing of the casing, the well string was suspended from the surface rather than being allowed to rest at the bottom of the hole. With the well string centered in the borehole, the sand filter pack was poured from the surface to fill the annulus between the well string and the borehole wall to approximately 2 feet above the top of the well screen. On some wells the filter sand could not be poured from the surface due to bridging problems, in which case the filter sand was tremied in with fresh water through a polyvinyl chloride (PVC) tremie pipe. A 2- to 5-foot-thick seal of bentonite chips or pellets was poured in on top of the settled sand pack. When bentonite chips and/or pellets could not be poured into place due to bridging, they were replaced by a bentonite slurry which was tremied in above the filter pack. After the bentonite had been given sufficient time to hydrate, the remaining annular space was filled to the surface with a bentonite/cement grout completing well installation.

The shallow monitoring wells were completed in the first water bearing zone encountered. All wells were constructed with 10-foot screens placed at the base of the well (no sediment sumps), except well MW2-63B in which a 5-foot screen section was installed to avoid penetrating an upper confining layer. (See geophysical logs in Appendix B.) Total depths of

the three downgradient wells (MW2-62B, MW2-63B, and MW2-64B) ranged from 23 to 26 feet below ground surface. The upgradient well MW2-65B, however, was installed to a depth of 47 feet below ground surface since the first saturated section was observed at a depth of approximately 40 feet. This apparent shift in depth to water suggests that the uppermost saturated section screened by the downgradient wells may be pinching out to the north where the upgradient well is located.

4.2 Deep Monitoring Well Installation

Four deep, double cased monitoring wells were installed in the LSZ to determine the existence and degree, if any, of groundwater contamination in that zone. Deep wells were double cased to isolate the USZ in order to minimize cross contamination. The four deep wells (2-62A, 2-63A, 2-64A, and 2-65A) were installed adjacent to corresponding shallow wells forming four shallow-deep well pairs (Figure 4-1). In addition, soil samples collected from above the shallow aquifer water table in each monitoring well boring were chemically analyzed to determine the degree, if any, of subsurface soil contamination at the former fire training area.

As mentioned in the previous subsection, the gradient in the LSZ was presumed to be toward the southwest. Also, due to a confining layer separating the LSZ from the USZ, bank recharge has negligible potential for influencing the groundwater gradient in the LSZ, even for wells near the creeks. Therefore, similar to the shallow well set, 2-65A is the upgradient well while MW2-62A, MW2-63A, and MW2-64A are the downgradient wells. Well 2-65A is used to determine if any contamination is coming on site from upgradient.

Pilot borings for the deep wells were initially advanced down to the water table with 8-inch outside diameter (O.D.) hollow-stem augers. Conditions permitting, the 5-foot tube sampler was used to continuously sample the pilot borings for lithologic logging purposes. Based on odor, field screening with a photoionization detector/flame ionization detector (PID/FID), and visual inspection one sample was collected from each 5-foot section for chemical analysis. When forced to use the center bit to advance borings through harder strata, 2-foot split spoons were used to collect samples for chemical analysis and logging purposes. At each deep well boring, one soil sample was collected for analysis from each 5-foot interval down to the top of the water table where the final analytical sample was collected. At FTA2 this sampling scheme resulted in the collection of 21 total soil samples and one field duplicate, which were each analyzed for VOCs, SVOCs, and priority pollutant metals. A total of two additional samples were collected from the deep well borings for geotechnical analysis, including the

following parameters: grain-size distribution, moisture content, cation exchange capacity (CEC), and vertical permeability.

After the boring had been advanced to the projected confining layer between the USZ and LSZ, a geophysical log was run to determine the optimal depth at which to set the surface casing. After the casing set point was approved by the Tinker AFB project manager, the pilot hole was reamed with a 12-inch O.D. auger to the desired depth in order to set the 8-inch surface casing. The 8-inch carbon steel surface casing was lowered to the bottom of the reamed hole and centered with the drill rig. With the surface casing in place, bentonite/cement grout was tremied into the annular space between the surface casing and the borehole wall. A cement shoe at the bottom of the surface casing prevented any grout from entering the casing. Surface casings were allowed to set 24 hours prior to mud rotary drilling of the lower section for deep well installation. Casing depths in the three downgradient wells ranged between 25 and 30 feet. Surface casing in the upgradient well (2-65A) was set at 55 feet because saturation was encountered at a greater depth than in the other wells. The USZ appears confined at this location. The 55-foot depth was chosen based on drilling information to ensure isolation of the USZ.

After drilling through the cement shoe at the base of the surface casing, deep well installation proceeded as described in Section 4.1 on shallow well installation. Well settings were recommended based upon interpretation of geophysical logs and were subject to final approval by the Tinker AFB project manager prior to well installation. The deep, double cased monitoring wells were completed to depths ranging from 63 to 76 feet. All of the deep monitoring wells were constructed with 10 feet of screen at the base of the well (no sediment sumps).

4.3 Pilot Hole

In addition to the installation of the eight wells at FTA2, one 100-foot deep stratigraphic pilot hole was drilled solely for geophysical logging purposes. This stratigraphic boring, placed between wells 2-65a and 2-65B, was advanced via mud rotary drilling without collecting any soil samples. Once completed and logged, the stratigraphic boring was grouted to the surface. The primary purpose of this pilot hole was to provide a tie point for Base-wide stratigraphic correlations.

4.4 Surface Completion

As specified by the Tinker AFB project manager, all eight wells installed at FTA2 received flush-mount surface completions. Each of these flush completions consists of a 12-inch-diameter iron manhole cover set into a 4-foot by 4-foot square concrete pad centered on the well casing stick-up. To divert runoff away from the wells, the concrete pads are sloped away from the manhole covers (set no more than 4 inches above the ground) to the outer edges of the pads which are flush with the ground surface. To ensure the security of the wells, each well is fitted with a watertight and airtight, locking well cap. As requested, all the padlocks are keyed identically, and all bolts for the manhole covers are the same size.

4.5 Well Development

Once the surface completions had been given sufficient time to cure, wells were developed through a combination of surging, bailing, and pumping. A nitrogen airlift technique was used to remove sediment from some wells in which surging and bailing could not remove excess sediment. A minimum of five well volumes of water was purged from each well during development. Purging and/or surging continued until the pH of the well had dropped and stabilized, indicating that any drilling mud, dissolved grout or other foreign material introduced during well installation had been sufficiently flushed out of the well. Well development was considered complete when the well was producing water that was clear to the unaided eye and met final approval by the Tinker AFB project manager.

4.6 Groundwater Sampling

To provide the wells with adequate time to recover and stabilize after development, the newly installed wells at FTA2 were allowed to sit for 3 days prior to the first groundwater sampling event. Static groundwater levels and total depth measurements were recorded prior to purging for sampling. The water level data were later used to contour potentiometric surface maps of the USZ and the LSZ. All wells were then purged to ensure that water samples representative of aquifer conditions would be obtained during sampling. Wells were considered sufficiently purged once three well volumes of water had been removed from a well or the well had been purged to dryness. While purging, pH, temperature, and conductivity readings were collected and monitored for unusual variations that would indicate that additional well volumes should be evacuated before sampling.

A total of eight groundwater samples and one field duplicate were collected from the wells at FTA2. To prevent cross contamination between the wells and to eliminate decontamination time, each well was sampled with a disposable bailer and rope, which were discarded with

project waste after use. A final round of field pH, temperature, and conductivity readings was recorded as the samples were being collected. Groundwater samples were each analyzed for the following parameters: VOCs, SVOCs, total organic carbon (TOC), total petroleum hydrocarbon (TPH), priority pollutant metals, standard inorganic groundwater parameters, chemical oxygen demand (COD), and phenols.

4.7 Elevation and Location Surveying

After completion, the elevations and locations of the monitoring wells and the stratigraphic pilot hole at FTA2 were determined by a State of Oklahoma licensed surveyor. For each well, the ground surface, the top of the well casing, and the top of the concrete pad were surveyed relative to Base datum information provided by Tinker AFB. For the stratigraphic boring, only the ground surface directly adjacent to the grouted hole was surveyed. Elevations and locations of any pre-existing monitoring wells and piezometers at FTA2 were also determined. All locations are provided in the Base coordinate system and all elevations are relative to msl.

5.0 Investigation Results

5.1 Data Quality Evaluation

The following sections provide an evaluation of the data quality and the results of the RFI performed at the FTA2. Section 5.1 discusses the methods and procedures used to ensure data quality and useability. Section 5.2 provides a discussion of the source characterization and the potential of the FTA2 as a contributing source of contamination. Section 5.3 discusses the hydrology of FTA2. Section 5.4 provides details regarding the contaminant characterization via analysis of the results of the soils and groundwater investigation.

The quality of the analytical data used for the RFI must be sufficient to support the associated risk management decisions. Data quality is ensured through adherence to Data Quality Objectives (DQO) and the sampling and analysis program outlined in the Data Collection Quality Assurance Plan (DCQAP) (IT, 1993b). The DCQAP identifies sampling locations, sampling methods, DQOs, field and laboratory quality control testing, analytical methods and reporting, and data evaluation and verification. The quality control of field and laboratory activities; the assessment of precision, accuracy, and comparability of the data; and the verification of the data are the most significant activities designed to ensure compliance with the DQOs.

5.1.1 Field Quality Control

Field quality control testing involved the collection of control samples to aid in evaluating inaccuracies which may be induced by field activities. These control samples include:

- **Field Blanks.** A field blank is an amount of water, gas, or solid that is provided to demonstrate the absence of contamination during sampling. Field blanks were only collected for groundwater and waste samples.
- **Trip Blanks.** Volatile organics samples are susceptible to contamination by diffusion of organic contaminants into the sample container. Therefore, trip blanks were analyzed to monitor for sample contamination during shipment and storage. No trip blanks were obtained for soil samples, due to the dissimilarity in matrix between the blanks and the actual samples.
- **Rinsate Blanks.** A rinsate blank is a volume of rinse solution (e.g., deionized distilled laboratory water or organic solvent) used to rinse a sampling tool which contacts more than one sample. The rinse solution was collected after the sampling tool was used and cleaned, to demonstrate that no residual contamination remained on the tool to carry over to the next sample.

• **Field Duplicates.** Duplicate analyses were performed to evaluate the precision of analysis. Both field and laboratory duplicates were taken and analyzed. Results of these analyses were used to determine the relative percent difference (RPD) between replicate samples.

5.1.2 Laboratory Quality Control

Laboratory quality control testing involved the use of control samples to aid in evaluating quality control errors which may be induced by laboratory activities. The control samples include:

- **Method Blanks.** A method blank is a volume of deionized and distilled laboratory water for liquid samples, or a purified solid matrix for soil/sediment samples, carried through the entire analytical procedure to identify contaminants introduced during the procedure.
- **Bottle Blanks.** At a frequency of 1 percent or greater, laboratory-prepared sample containers were tested to verify that the container cleaning procedure is performed acceptable. Parameters of concern for the particular container were tested (e.g., metals for plastic containers).
- Laboratory Blanks. Distilled water-filled volatile organic analysis (VOA) vials were stored in the laboratory using the same method of storage used for field samples. If the field and trip blanks contained high concentrations of contaminants, the laboratory blank was analyzed to identify the source of contamination.
- **Matrix Spikes.** To evaluate the effect of sample matrix on analytical methodology accuracy, a separate sample aliquot was spiked with the analyte of interest and analyzed with approximately ten samples or, if a smaller number of samples are associated with a test series, for each group of samples.
- **Surrogate Standards.** Surrogate standards are compounds added to gas chromatography/mass spectrometry (GC/MS) standards, blanks, and samples prior to extraction or purging to monitor the recovery efficiencies of the sample preparation and analytical procedures on a sample-by-sample basis.

5.1.3 Evaluation of Precision and Accuracy

As part of the analytical quality control testing program, quality control sample results were used to apply precision and accuracy criteria for each parameter that was analyzed. When the analysis of a sample set was completed, the quality control data generated were evaluated based on the following criteria:

• **Method Blank Evaluation.** The method blank results were evaluated for high readings characteristic of background contamination. If high blank values were

- observed, laboratory glassware and reagents were checked for contamination and the analysis of future samples halted until the system could be evaluated.
- Trip, Field, Laboratory, and Rinsate Blank Evaluation. Trip, field, laboratory, and rinsate blank results were evaluated for high readings similar to the method blanks described above. If high blank readings were encountered, the procedure for sample collection, shipment, and laboratory analysis would be reviewed.
- **Duplicate Sample Evaluation.** Duplicate sample analysis was used to determine the precision of the analytical method for the sample matrix. The duplicate results will be used to calculate the precision as defined by the RPD.
- **Matrix Spike Evaluation.** The observed recovery of the spike versus the theoretical spike recovery was used to calculate accuracy as defined by the percent recovery (%R).
- **Surrogate Standard Evaluation.** The results of surrogate standard determinations were compared with the true values spiked into the sample matrix prior to purging or extraction and analysis, and the percent recoveries of the surrogate standards were determined.
- Comparability Between Data Sets. Comparability is a qualitative parameter
 expressing the confidence with which one data set can be compared with another.
 Comparability for sampling and analysis was achieved by specifying and using only
 well-recognized techniques and accepted standard EPA methods and procedures for
 sampling and analysis reporting of representative samples.

5.1.4 Data Verification

Data packages and parameters were evaluated against the following criteria to ensure data validity prior to use:

- Sampling documentation (e.g., sample collection log, Chain-of-Custody Form, and Request for Analysis Form) matches samples submitted to samples analyzed.
- Chain-of-Custody Forms are complete.
- Sample identification summary for each sample is present.
- Analytical results for each sample include correct units, detection limits, method used, date sampled, date extracted, date analyzed, dilutions noted.
- Holding times were met.
- Data on field and laboratory duplicate samples for RPDs were within QC limits.

- Matrix spike/matrix spike duplicate (MS/MSD) recoveries were within QC limits.
- Method blanks were within control limits.

5.1.5 Data Useability

The data verification did not identify any reoccurring problems with analytical procedures or analytical reporting. Precision and accuracy for each analytical method as demonstrated by the evaluation or surrogate recoveries, laboratory control samples, MS, and MSD recoveries were satisfactory. The sample identification summaries for all samples and methods were present and complete. No data were found to be invalid. All deficiencies encountered were minor and did not affect the overall quality of the data, since other DQOs were met. Deficiencies were generally the result of matrix interference.

The analytical data generated from the RFI are of sufficient quality to make evaluations and support recommendations.

5.2 Source Characterization Results

FTA2 was used infrequently from 1962 to 1966 for training fire response personnel. The area was an unlined shallow depression or pit in which water and then flammable fuels, waste oils, and waste solvents were placed and ignited. Site characterization for this RFI has been designed to investigate whether any of the hazardous fuel materials, or any other hazardous constituents, have been released to the subsurface.

In a 1987 investigation by the USACE (described in Section 2.4), seven soil borings were made to characterize this potential contaminant source (USACE, 1988). Three borings were placed within the SWMU area and soil samples were collected for chemical analysis. Since at that time there was no visible aboveground trace of the former training area, four additional borings were made in the area to help verify that the first three borings had not been wrongly located outside of the SWMU. Samples from the second group of borings were examined for odors and visual appearance. These latter samples had no discoloration or odor, and appeared to be undisturbed soils. All seven borings penetrated approximately 4 feet of unconsolidated soils and 1 to 3 feet of the underlying shale, where auger refusal occurred. None of these borings extended deep enough to encounter a zone of groundwater saturation.

Chemical analysis of soil samples from the first three borings of the previous investigation indicated that four hazardous organic compounds (methylene chloride, acetone, bis[2-ethyl-

hexyl]phthalate, and tetrahydrofuran) were sporadically detected. While these compounds were also detected in several laboratory blanks, elevated concentrations in some samples suggested that methylene chloride and bis(2-ethylhexyl)phthalate were also present in the soil at the site. However, concentrations of the compounds were below toxicological levels (USACE, 1988).

Other compounds were also detected in the 1987 investigation. Relatively low (<70 milligrams per kilogram [mg/kg]) levels of several fuel-related but nonhazardous organic compounds were measured in the samples. However, none of the common volatile compounds usually associated with fuels were detected. Finally, concentrations of metals in these samples were found to be within the range measured in background samples. The details of this study are described in the IRP Response Action, Final Report (USACE, 1988).

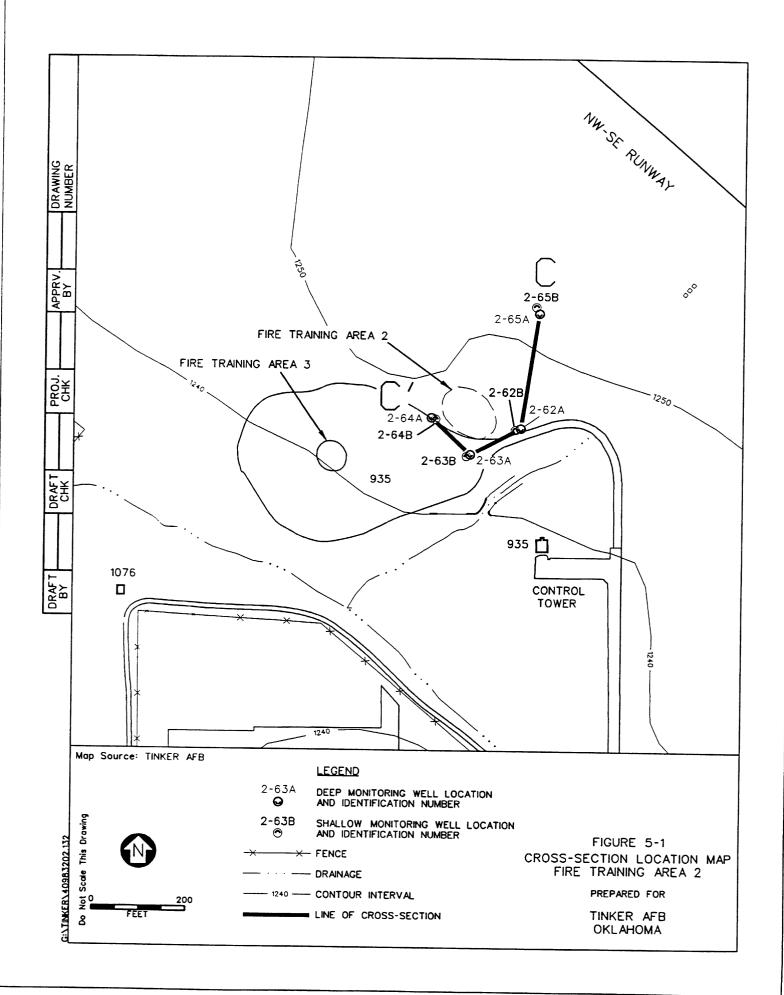
No samples were collected of the material burned in the pit.

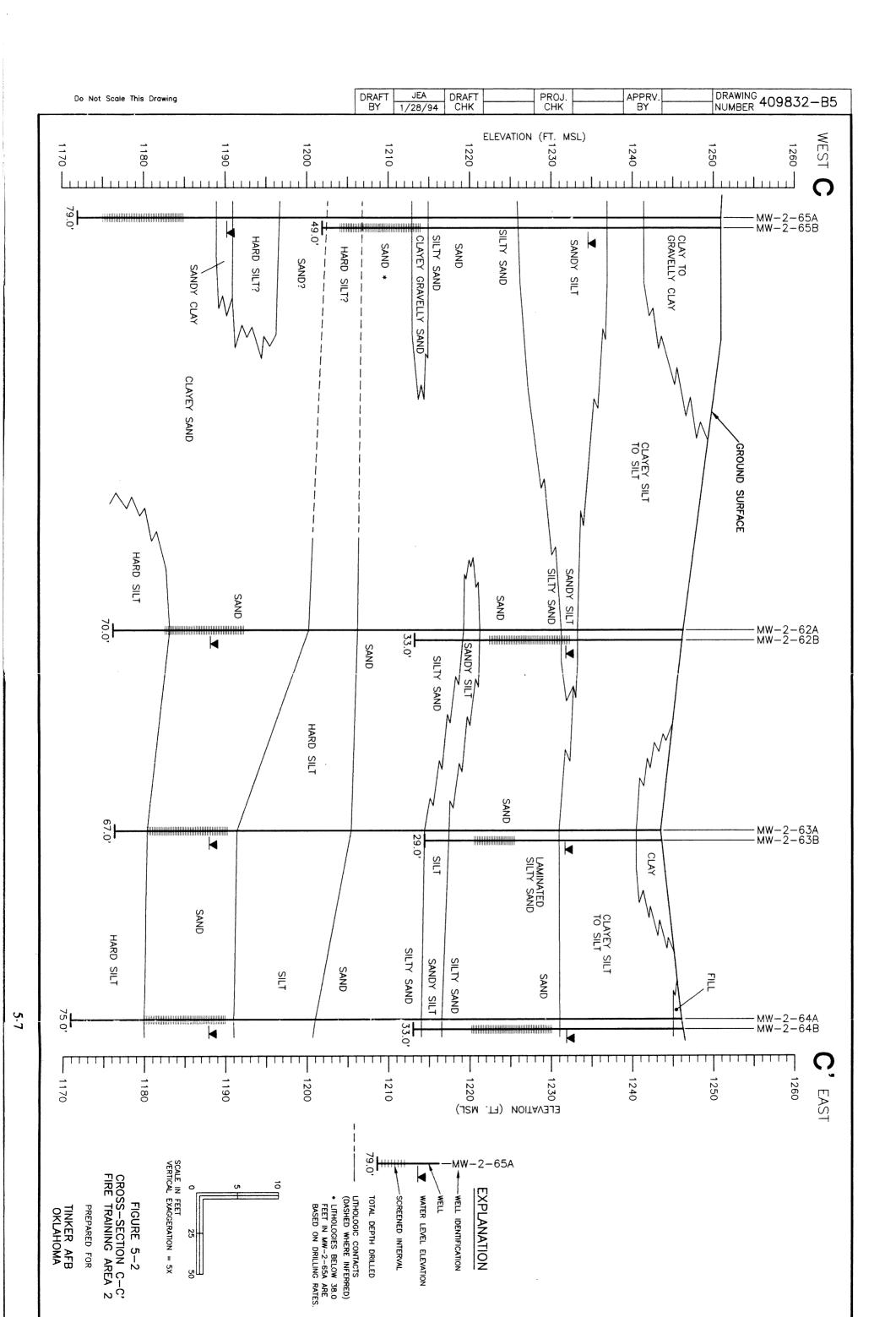
5.3 Hydrology of FTA2

Hydrologic conditions in the vicinity of FTA2 have been interpreted based on logs of the four pairs of monitoring wells drilled for the RFI (Figure 5-1). Each well pair consists of a shallow well completed in the USZ and a deeper well complete in the LSZ. Installation of these wells is described in Chapter 4.0. The boring logs and well construction diagrams are included in Appendix A.

The geology of FTA2 is illustrated by a cross section of the area, which also shows locations of the well screens (Figure 5-2). Approximately the upper 10 to 15 feet of the geologic section below the site consists of reddish silty clay or clayey silt of the Hennessey Group. Thin layers of anhydrite or gypsum occur near the base of this zone.

Underlying the Hennessey, are interbedded fine sandstone and siltstone of the Garber Sandstone, with occasional interbedded clayey layers. The sandstones range in hardness from loose (lightly cemented) to well indurated. The clay layers range from slightly plastic to moderately plastic and often contain significant quantities of silt and sand, with occasional gravel clasts. A layer of hard siltstone appears to be traceable across the area at a depth of approximately 40 to 45 feet. The maximum depth of exploration was 79 feet below grade in well 2-65A.



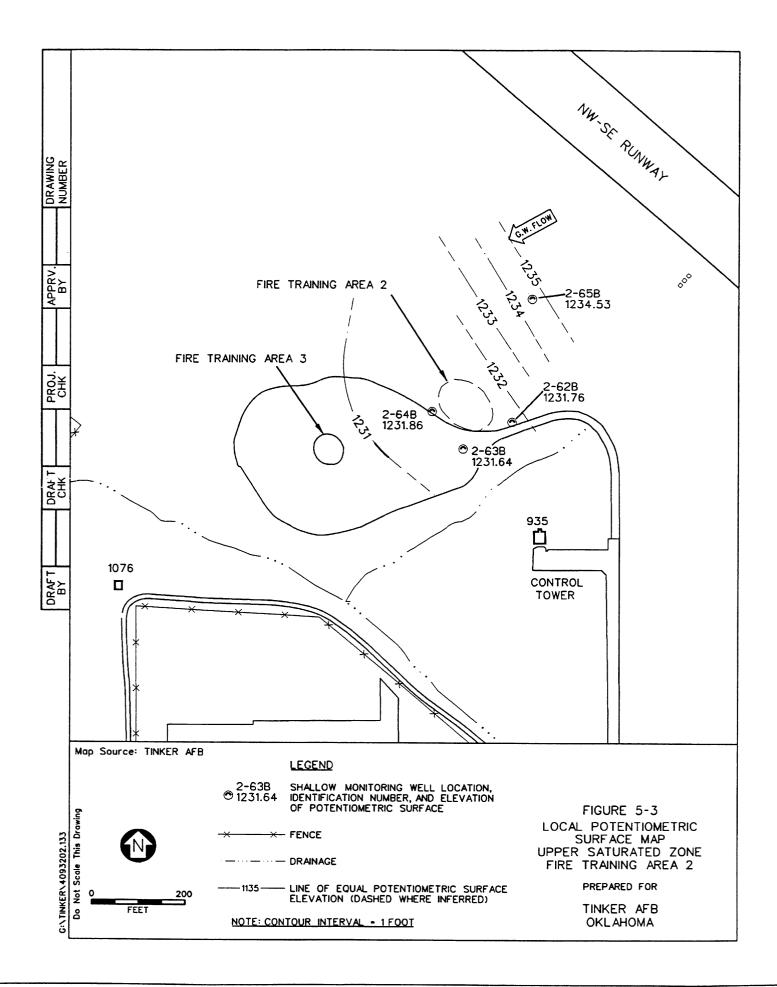


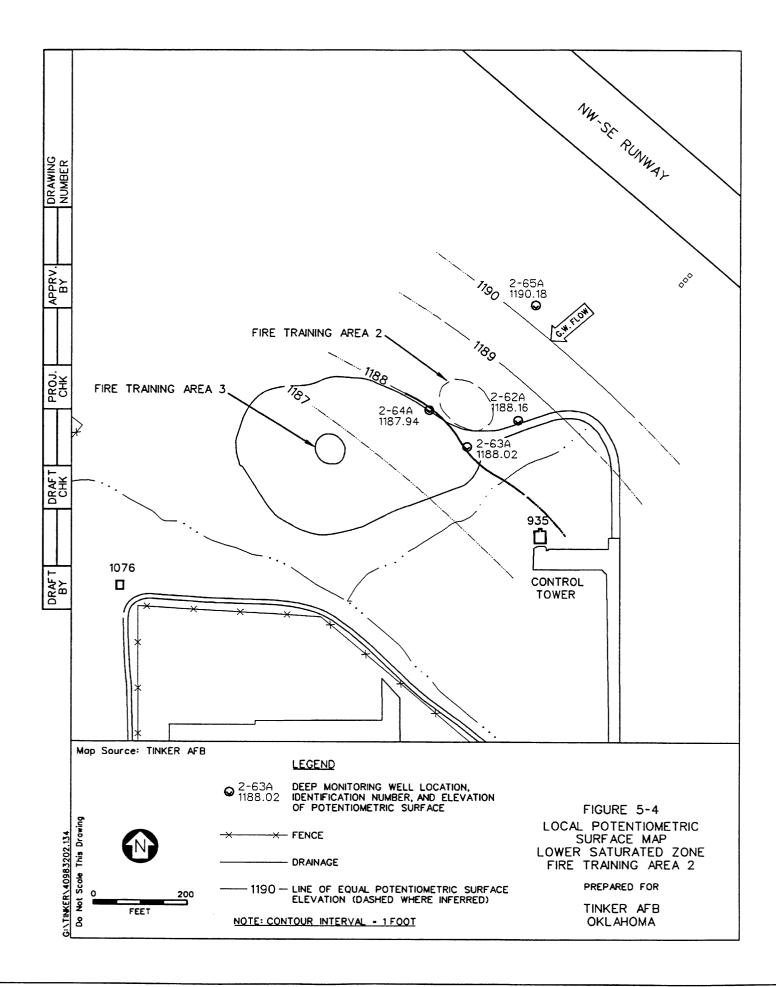
The water levels in the LSZ wells are approximately 45 feet below those measured in the USZ wells. The hard siltstone layer whose top occurs at the approximate depth of 45 feet (approximately 1,205 ft msl) appears to be the aquitard causing the separation in this area. The water levels in the USZ wells indicate that the water table is approximately 15 feet below grade. The LSZ wells are completed in the upper part of the Garber-Wellington aquifer and water levels are at a depth of approximately 60 feet below grade (approximately 1,188 to 1,190 ft msl).

Water levels in the USZ appear to be several feet lower than the bed of a nearby southwest-flowing tributary of Crutcho Creek. In addition, the water levels are projected to be several feet lower than the bed of the main stem of Crutcho Creek approximately 400 feet southwest of FTA2. It appears, therefore that these streams would not be discharge areas for groundwater (gaining streams) in this area unless water levels in the USZ rose significantly.

The water levels in the USZ suggest that the water table is relatively flat in the area of wells 2-62B, 2-63B, and 2-64B. Since field observations suggest that there is often flow in the southwest-flowing tributary of Crutcho Creek, the flat gradient may reflect a groundwater mounding effect from infiltration of surface water in the tributary stream as it emerges from the nearby culvert which passes beneath the NW-SE Runway (Figure 5-1). The upstream part of this tributary drains an area occupied by several industrial facilities and ramp areas on the east side of the airfield. Any contaminated water discharged in these areas would have the potential to percolate into the subsurface and affect water quality in the USZ near FTA2.

Potentiometric surface maps for the USZ and the LSZ are shown in Figures 5-3 and 5-4, respectively. The maps indicate that groundwater flow in both zones is toward the southwest. The water levels in both zones at FTA2 are generally consistent with the water levels shown on maps of the Base-wide conceptual model of the two principal water-bearing zones at Tinker AFB. Due to the relatively flat gradient in the vicinity of the three wells mentioned in the previous paragraph, several interpretations of the configuration of the USZ water table are possible. Figure 5-3 shows an interpretation based on the assumption that the tributary to the southeast of FTA2 is a losing stream and creates a small mound or "nose" on the sloping water table.





5.4 Contaminant Characterization Results

This section describes the analytical of the samples of soil and groundwater collected during the RFI of FTA2. In addition, the establishment of background concentrations for metals in soils in this area is described.

5.4.1 Establishment of Surficial Soil Background Concentrations

Background soil concentrations for trace metals were determined based on a study performed by the USGS (1991). The study area was confined to approximately four counties in central Oklahoma. Tinker AFB lies at the approximate center of this area. A total of 293 B-horizon soil samples were collected throughout this area. Soil samples were collected at the top of the B-horizon, which was usually 20 to 30 centimeters below the surface but ranged from 3 to 50 centimeters below the surface.

The use of B-horizon soil as selected by the USGS for metals background concentrations in soil is conservative in that the soil sampled does not reflect all possible anthropogenic influences. Most of the samples were obtained from hill crests and well drained areas in pasture and forested land, well away from roadways to minimize contamination from vehicular emissions (i.e., nearly "pristine" areas). Trace metal inputs to the study site soils on Base, however, will come from anthropogenic sources outside of the study area, in addition to those sources related to disposal activities or operations within the confines of the study site. Responsibility may thus be taken for more trace metal impacts than are actually attributable to a given site.

An additional level of conservatism was added in the manner in which the site-specific metals concentrations were compared to the background levels. Typically, the environmental concentrations of trace metals at study sites are represented by the arithmetic upper 95th confidence interval on the mean of a normal distribution. This upper 95th confidence interval value is then compared to the background values. The intent of this typical approach is to estimate a Reasonable Maximum Exposure (RME) case (i.e., well above the average case) that is still within the range of possible exposures.

To expedite this comparison and establish greater conservatism, the maximum concentration found at the site of concern, rather than the upper 95th confidence interval value, was compared to the USGS background values. If the environmental concentration of a particular analyte was below or within the minimum-maximum range of the USGS background concentrations, that analyte was considered to be naturally occurring and of no further

concern to this investigation. Given the conservative approach of the comparisons, site-specific metals concentrations would have to significantly exceed the USGS background levels and be attributable to operations at the site before they would be considered a contaminant of concern.

The numerical comparison of site-specific metals concentrations to the USGS background concentrations is presented in the following section.

5.4.2 Soil Characterization

During this investigation of FTA2, chemical analyses were performed on a total of 21 soil samples and one duplicate soil sample collected from the four boreholes drilled for installation of "A"-series monitoring wells into the LSZ. A sample was selected for analysis from each 5-foot interval down to a depth of approximately 20 feet by using the field screening techniques described in Chapter 4.0. Chemical analyses included metals (aluminum, arsenic, barium, beryllium, cadmium, total chromium, chromium VI, copper, iron, lead, mercury, nickel, silver, and zinc) volatile organics, and semivolatile organics. A single sample was collected from the boring for well 2-63A for geotechnical analysis, as described at the end of this section.

The chemical analytical results indicate that the shallow soils have been impacted by organic compounds and possibly metals. Analytical results for the detected analytes are presented in Table 5-1. Appendix D contains a complete listing of analytical results.

Only 1,1,1-trichloroethane (TCA) was confirmed above the method detection limits at concentrations ranging from 5.2 to 6.7 μ g/kg. Several SVOCs were detected in the soil samples. These include 1,1,1-trichloroethane (TCA) (ranging from 5.2 to 6.7 μ g/kg), bis(2-ethylhexyl)phthalate (ranging from 1.3 to 2.1 mg/kg), di-n-butyl phthalate (ranging from 0.34 to 1.7 mg/kg), and butyl benzyl phthalate (ranging from 0.56 to 0.96 mg/kg). These concentrations are all below the Action Levels given in Chapter 7.0.

Several metals were detected in the soil samples, but all were within the background ranges reported by the USGS. The comparisons of metals to background are shown in Table 5-2.

During the installation of deep monitoring wells 2-62A and 2-63A, a soil sample from each well was collected for geotechnical analysis to determine vadose zone properties. A Shelby tube was used to collect a soil core from each of the two borings. The samples were

Analytical Results for Fire Training Area 2 for Soil Tinker Air Force Base, Oklahoma Table 5-1

Well/Boring:	1g: 2-62A	2-62A	2-62A	2.62A	2-62A	2-63A	2-63A	2-63A
Sample ID:		A1562	A1563	A1564	A1565	A1555	A1556	A1557
Depth in Feet:		6-7	10 - 11	15 - 16	22 - 23	2-3	7-8	10 - 11
Parameters	Result QF	OFR Result OFR Result OFR Result OFR	Result OFR	Result QFR	Result QFR	Result)FR	Resi
Metals (mg/kg)								
Aluminum	11000 N	15000 N	N 00001	Z 0021	N 057	N 00011	11000 N	1000C1
Arsenic - Graphite Furnace	1	3.4	5.4	1.2		2 × ×	NI OWNIT	
Barium	N 069	32 N			N 09	2 006 006	22 N	N 011
Beryllium	0.94	1.3	1.2			1.7	1.4.1	1.0
Cadmium	0.69			0.57		0.71	į	7.70
Chromium	13	14	14	7.6	e	13	11	20
Copper	8.6	22	21	1.7	1.1	6.6	15	18
Iron	11000 N	11000 N	14000 N	7300 N	2400 N	15000 N	10000 N	Z 0001
Lead - Graphite Furnace	z Z	S N	7.1 N	3.2 N	1.5 N	13 N	7.3 N	Z
Nickel	17	25	21	7.3		10	. «	
Silver	0.41					ì	2	}
Zinc	22	29	22	7.1	3.1	81	74	7.0
Semivolatiles (mg/kg)				!	:	2	S	ì
Butylbenzylphthalate	I							
Di-n-butylphthalate						1.7	0.34	0.83
bis(2-Ethylhexyl)phthalate						•		3
1,1,1-Trichloroethane	3.1 J	6.7	5.6	5.2	5.4	3.8 J	4.3 J	1

Analytical Results for Fire Training Area 2 for Soil Tinker Air Force Base, Oklahoma Table 5-1

	Well/Boring:	2-63A	2-63A	2-64A	2-64A	2-64A	2-64A	2-64A	2-65A
	Sample ID:	A1558	A1559	A1548	A1549	A1550	A1551	A1552	A1540
	Depth in Feet:	15 - 16	18 - 19	2-3	7-8	7-8	12 - 13	17 - 18	2.5 - 3.5
Parameters		Result QFR	Resu	Resu	Resu	Result QFR	Resu	Resu	Resn
Metals (mg/kg)									
Aluminum		2 006	N 0051	N 00001	Z 00091	N 0001	2 0000	N 0081	N 0078
Arsenic - Graphite Furnace				2.0	8 -	17	11		200
Barinm		7		i 8	2:		1:1		0.7
The state of the s		N 03		2 060				Z 90	150 N
Beryllium				1.4	1.9	1.6	1.5		1.1
Cadmium			0.0	1.1	0.55				0.74
Chromium		3.9	4	15	19	14	11	8.5	9.4
Copper				8.5	22	20	19		5.2
Iron		2800 N		13000 N	13000 N	N 0086	11000 N	3700 N	10000 N
Lead - Graphite Furnace		N 88.0	1.2 N	7.2 N	2.5 N	3 N	7.8 N	1,5 N	8.8 N
Nickel				17	28	22	21	6.3	12
Silver								!	
Zinc		4.7	8.4	23	33	26	22	7.8	12
Semivolatiles (mg/kg)						}	}	2	1
Butylbenzylphthalate		0.63	0.57	0.56	0.67	0.78	0.96		
Di-n-butylphthalate		0.76	0.65	1.4	1.2	1.2	1.4	0.061 J	
bis(2-Ethylhexyl)phthalate		1.7	1.7	1.3	1.5	1.9	2.1		
1,1,1-Trichloroethane									

Analytical Results for Fire Training Area 2 for Soil Tinker Air Force Base, Oklahoma Table 5-1

Well/Boring:	Sample ID:	Depth in Feet:		Metals (mg/kg)													Semivolatiles (mg/kg)			 in sample blank	instrument calibration range for that specific analysis	= Concentration is an estimated value	= Sample is outside of Matrix Spike QC Limit	•	Analytical data has not been validated
2-65A	A1541	6-7	Result OFR		S900 N	3.3	N 69	0.88		8.2	5.5	7200 N	5.5 N	12		15					ange for that spec	•			
2-65A	A1542	12 - 13	Result OFR		19000 N	1.2	27 N	2		24	22	16000 N	3.5 N	56		35					ific analysis	•			
2-65A	A1543	16 - 17	Result OFR		9300 N		32 N			11	9.2	11000 N	9.1 N	13		17									
2-65A	A1544	20 - 21	Resi		N 0006		S4 N		11	37	=======================================	22000 N		22		26	;								
2-65A	A1545	26 - 27	Resu		2300 N					80	}	6100 N		7.9	}	7.8	!		1 200						
2-65A	A1546	29-30	Resi		N 0021	2.3	ì			6.7	3	N 0094			,	50	}								

Table 5-2
Soil Metals Background Comparison SWMU-8, FTA2, Tinker AFB

	Site	USGS Background	Concentration
Analyte	Maximum Value (ppm)	Detection Limit (ppm)	Range (ppm)
Aluminum	19,000	50	3,800-89,000
Arsenic	5.4	0.1	0.6-21
Barium	900	1	47-6,400
Beryllium	2.0	1	<1-3
Cadmium	1.1	2	<2
Chromium	37	1	5-110
Copper	22	1	<1-59
Iron	22,000	50	1800-58,000
Lead .	13	4	<4-27
Nickel	28	2	<2-61
Silver	0.41	2	<2-61
Zinc	35	2	3-79

submitted for geotechnical analysis of the following parameters: grain-size distribution, moisture content, cation exchange capacity (CEC), and vertical permeability. Certificates of analysis are provided as Appendix E. The analytical results are summarized as follows:

Sample Location	2-63A	2-62A
Sample Depth (feet)	-8 to -10	-8 to -9.5
Vertical Permeability (cm/sec)	3.2 x 10 ⁻⁹	2.9 x 10 ⁻⁹
Moisture Content (percent)	10.7	9.4
CEC (MEQ/100 grams)	23.78	16.50
Particle Size Distribution	See Appen	dix E graph

5.4.3 Groundwater Characterization

Groundwater samples were collected from the eight monitoring wells installed in the vicinity of SWMU-8. Four of the samples are of groundwater from the USZ, and four samples were collected from the LSZ. The positions of the well screens are shown on the cross section in Figure 5-2. The samples were analyzed for VOCs, SVOCs, metals, and standard inorganic groundwater parameters. The analytical results are presented in Tables 5-3 and 5-4.

Organic compounds were detected in groundwater from several of the wells. The greatest number of compounds and highest concentrations were detected in well 2-62B, completed in the USZ. None of the samples from LSZ wells contained any of the organic compounds at concentrations above the method detection limits.

The VOCs detected in the four USZ wells and their maximum concentrations included: trichloroethene (TCE) (8,900 μ g/L), cis-1,2-dichloroethene (DCE) (1,700 μ g/L), 1,2-dichloroethane (DCA) (550 μ g/L), chlorobenzene (240 μ g/L), trans-1,2-dichloroethene (140 μ g/L), 1,1,2-TCA (9.0 μ g/L), 1,2-dichloropropane (7.3 μ g/L), 1,1-DCE (6.0 μ g/L), and benzene (5.7 μ g/L). Volatiles detected but which were below the quantitation limit were toluene, tetrachloroethene (TCE), and chloroform.

Concentrations of VOCs were above the corrective action level (CAL) proposed in 40 CFR 264.521, primarily in samples from well 2-62B. These VOCs include, in well 2-62B, the concentrations of 1,1,2-TCA and tetrachloroethene. Other compounds, for which no CAL is available, were present in well 2-62B at concentrations which exceeded MCLs, including TCE, cis-1,2-DCE, 1,2-dichloropropane, 1,2-DCA, benzene, and trans-1,2-dichloroethene. In addition, concentrations of TCE in USZ wells 2-63B, 2-64B, and 2-65B also exceeded CALs.

Analytical Results for Fire Training Area 2 For USZ Groundwater Tinker Air Force Base, Oklahoma Table 5-3

Sample ID: Parameters Depth in Feet: Aluminum Barium Calcium Chromium Copper Iron Lead - Graphite Furnace Magnesium Selenium Selenium Sodium Zinc Semivolatile (up/L)	A1601	A 1602	A1666	1)		
Depth in Feet: Metals (mg/L) Im Im Stabilite Furnace In In In Semivolatile (10/L) Semivolatile (10/L)				A1600	A1603	A1604	
Im	0-0	0-0	0-0	0-0	0-0	0-0	
Metals (mg/L) Im Im Samivolatile (ng/L) (((((((((((((((((((t QFR Result	Result QFR Result	OFR	Result QFR	Result OFR	Resu	
im im im im im im in							
im fraphite Furnace fum ese m n Semivolatile (no I.)	8.2	5.1		5.9	1.4	0.95	
im Fraphite Furnace fum ese m n Semivolatile (no I.)	0.21	0.19		0.35	0.23	0.24	
im Fraphite Furnace fum ese m n Semivolatile (no II.)	48 N			61 N	S9 N	N 08	
Traphite Furnace fum see ese min see no see	0.04 N	0.029 N		0.014 N			
Fraphite Furnace lum ese m n Semivolarile (no/L.)	0.043 N	0.049 N					
- Graphite Furnace esium anese sium ium m Semivolatile (110/L)	11	5.5		13	2	1.1	
anese sium sium Semivolatile (119/1.)	0.004	0.0031					
anese sium ium m Semivolatije (119/1.)	43	52		45	33	52	
sium ium m Semivolatile (119/1.)	0.14 N	0.1 N		0.23 N	0.048 N	0.065 N	
m Semivolatile (119/1.)						1.7	
m Semivolatile (119/13)				0.1 N			
Semivolatile (119/1)	110	130		59	46	43	
Semivolatile (119/1.)	0.024 N	0.021 N		0.022 N			
[7 dn)							
1,3-Dichlorobenzene	53	46					
Volatile (ug/L)							
1,1,2-Trichloroethane	6	7.3					
1,1-Dichloroethene	5.7	9					
1,2-Dichlorobenzene	1900 D	1700 D					
1,2-Dichloroethane	500	550	430	1.2 J	2 J		
1,2-Dichloropropane	7	7.3					
	290 D	250 D					
Benzene	5.4	5.7					
Chlorobenzene	220	240	220		1.2 J		
Trichloroethene	8300 D	8900 D	7900 D	33	96	66	
cis-1,2-Dichloroethene	1600 D	1700 D	1300	45	39	24	
trans-1,2-Dichloroethene	130	140			3.5 J		

Analytical Results for Fire Training Area 2 For USZ Groundwater Tinker Air Force Base, Oklahoma Table 5-3

Well/Boring:	: 2-62B	2-62B	2-62B	2-63B	2-64B	2-65B
Sample ID:	: A1601	A1602	A1665	A1600	A1603	A1604
Depth in Feet:	0-0	0-0	0-0	0-0	0-0	0-0
Parameters	Result QFR	QFR Result QFR	OFR Result OFR	QFR Result QFR	QFR Result QFR	Result QFR
Miscellaneous (mg/L)						
Alkalinity, Titrimetric	520	330		470	380	500
Chemical Oxygen Demand	35					
Chloride by Ion Chrom.	87	89		39	34	57
Nitrate and Nitrite	2.9	2.7		3.8	3.8	2.6
Silica	7.3	6.9		8.9	4.3	11
Sulfate by Ion Chrom.	110	230		36	22	37
Total Phosphorus	0.15					
Total Dissolved Solids	630	099		510	450	650
Total Kjeldahl Nitrogen	0.38					
Total Organic Carbon	3	3		2.2	1.2	1.6
Total Suspended Solids	190	250		750	160	42
B = Analyte was also found in sample blank						
D = Compound identified at a secondary dilution factor.	on factor.					
E = Concentration exceeds instrument calibration range for that specific analysis	on range for that speci	fic analysis				
J = Concentration is an estimated value						
N = Sample is outside of Matrix Spike QC Limit	•					
< = Not detected						
QFR = Qualifier						
Analytical data has not been validated						

Analytical Results for Fire Training Area 2 For LSZ Groundwater Tinker Air Force Base, Oklahoma Table 5-4

2-65A A1609	0.0	QFR		2.8 N				91	53 N		4.3		6)	N 22 N			54	N 83			0.26 N		Q	***	18	, ,		3.9 N					
2.64A 2.6	0.0	Result QFR Result		2.9 N 2.		0.56			0.075 N 0.053			0.0042		0.12 N 0.067	z		23 22	0.021 N 0.028		388 25	0.2		350 19		1.1 0.78		14 N 2	.9.					
2:63A A1607	0.0	Result QFR		32 N	0.018	3.7	0.0066	100	0.12 N	0.1	57	0.025	57	1.2 N	N 6200	7.3	25	0.1 N		190		1900	380	17	3.3	8.8	17 N	0.19 N		fic analysis			
2-62A A1648	0.0	Result QFR		1.5		0.56		89	0.021		1.1		42	0.016			45			450		45	390	6.6	5.3	11	17			range for that speci-			
Well/Boring: Sample ID:	Depth in Feet:	Parameters	Metals (mg/L)	Aluminum	Arsenic - Graphite Furnace	Barium	Cadmium	Calcium	Chromium	Copper	Iron	Lead - Graphite Furnace	Magnesium	Manganese	Nickel	Potassium	Sodium	Zinc	Miscellaneous (mg/L)	Total Dissolved Solids	Total Kjeldahl Nitrogen	Total Suspended Solids	Alkalinity, Titrimetric	Chloride by Ion Chrom.	Nitrate and Nitrite	Silica	Sulfate by Ion Chrom.	Total Phosphorus	B = Analyte was also found in sample blank	E = Concentration exceeds instrument calibration range for that specific analysis	J = Concentration is an estimated value	N = Sample is outside of Matrix Spike QC Limit	

The SVOCs detected in the four USZ wells and their maximum concentrations included: 1,2-dichlorobenzene (1,900 μ g/L), 1,4-dichlorobenzene (290 μ g/L), and 1,3-dichlorobenzene (53 μ g/L). Bis(2-ethylhexyl)phthalate was detected below the quantitation limit in a sample from LSZ well 2-62A.

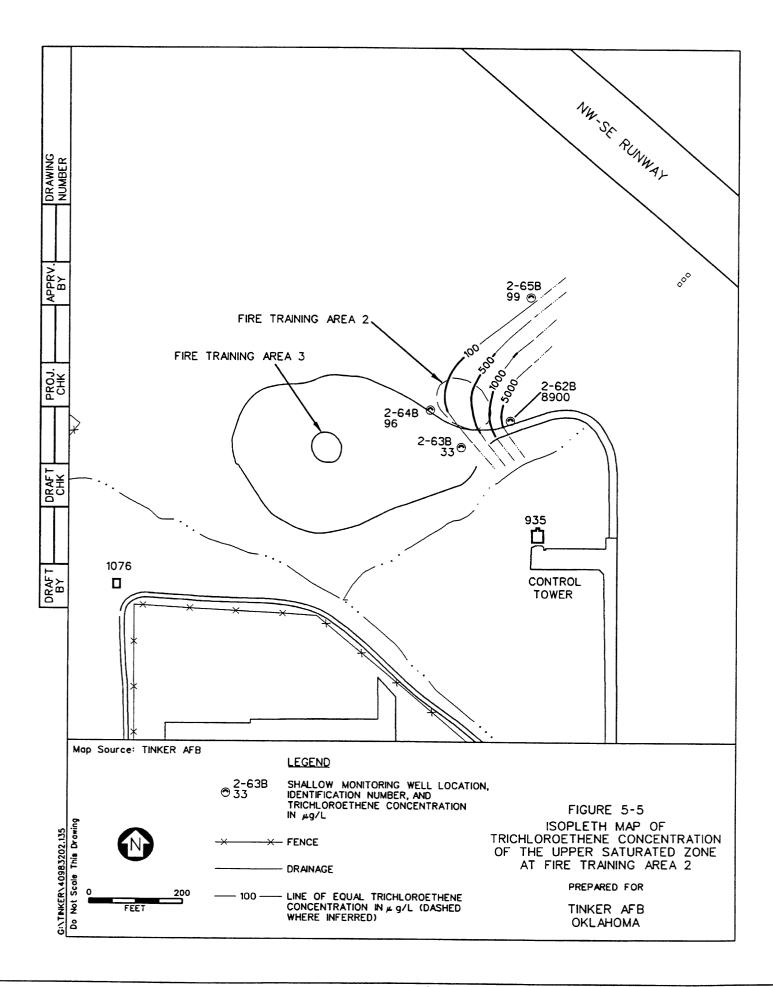
Concentrations of two SVOCs were above MCLs. This includes 1,2-dichlorobenzene and 1,4-dichlorobenzene in well 2-62B.

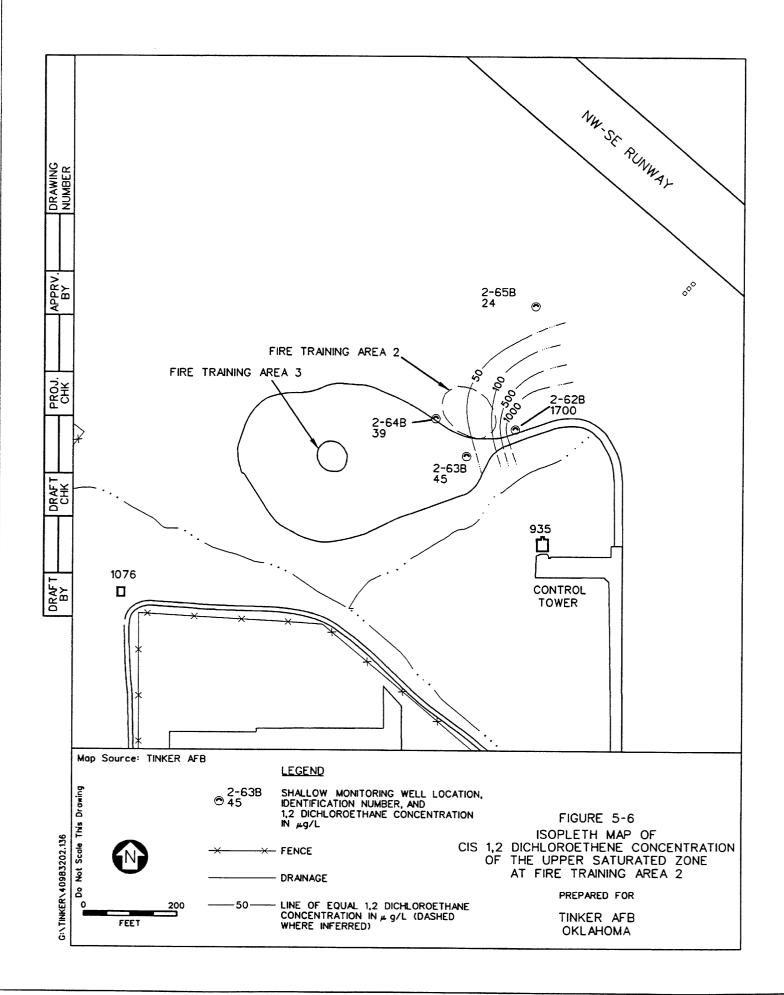
Concentrations of metals in groundwater samples from the wells at FTA2 were generally below MCLs. Three metals concentrations in the sample from LSZ well 2-63A appeared to exceed MCLs, including barium, chromium, and lead. However, this sample also contained total suspended solids at 1,900 mg/L, a much higher concentration than that observed in the other seven wells. It appears that the elevated metals concentrations in this sample are probably due to acid digestion of aquifer sediments containing natural metals.

The results of the analysis of groundwater samples from the eight wells suggest that the groundwater has not been substantially affected by operations at the former FTA2. The compounds detected in the wells are not generally associated with fuels, with the exception of the very low levels of benzene and toluene that were detected. These results are consistent with the analytical results for soils samples reported in the 1987 study (USACE, 1988), which found only traces of fuel-related nonhazardous alkanes. However, the presence of elevated concentrations on solvents in well 2-62B suggests that another source of hazardous materials may be nearby. The absence of similar compounds in the soil samples collected above the water table in this study suggests that the source of the contaminants is not in the areas where the eight wells were drilled.

The areal pattern of concentrations of organic compounds in groundwater in the vicinity of FTA2 is shown in Figures 5-5 and 5-6, which depict TCE and cis-1,2- dichloroethene, respectively. The maps indicate maximum concentrations at well 2-62B and suggest that concentrations decline to the north, west, and southwest. The contours suggest a source to the east, though other interpretations are possible, including a source to the northeast or to the north, between wells 2-62B and 2-65B.

Other evidence suggests that the source of contaminants could be to the east, in the vicinity of the culvert where the southwest-flowing tributary to Crutcho Creek emerges. The concentration of sulfate in well 2-62B is elevated compared to the other seven wells. This





elevation is consistent with downward leakage of surface water from the tributary, which would contact the gypsum or anhydrite beds near the base of the silty clay unit which overlies the USZ water table. Also, as noted previously, water levels in the USZ suggest a mounding of the water table in the vicinity of the tributary. Much of the protective upper silty clay unit has been removed by erosion by the tributary, which would facilitate loss of surface waters into the subsurface. If contaminated waters were present in this tributary, it appears possible that they could leak into the subsurface and contaminate the USZ. Potential sources of contaminants exist in the area drained by this tributary, including industrial facilities and ramp areas on the east side of the airfield.

6.0 Potential Receptors

A specific potential human and ecological receptor search has not been performed for FTA2. Data are available in the form of chemical analysis of soils and groundwater; current and future uses of these media; and ecologic and demographic information necessary to initiate a potential receptors search. The following sections describe the data available to begin identification of potential receptors.

6.1 Human Receptors

Tinker AFB is situated on a relatively flat expanse of grassland. Prior to the development of the Base, the area was characterized by large tracts of agricultural land. The Base currently occupies approximately 5,000 acres of semi-improved and unimproved grounds that are used for the airfield, golf course, housing area, offices, shops, and other uses characteristic of military installations.

The Garber-Wellington aquifer, which underlies Tinker AFB, is the single most important source of potable groundwater in the Oklahoma City area. The recharge area for the Garber-Wellington aquifer covers the eastern half of Oklahoma County, including Tinker AFB. Approximately 75 percent of the Base's water supply is obtained from production wells pumping from this aquifer. Industrial operations, individual homes, farm irrigation, and small communities not served by municipal distribution systems also depend on the Garber-Wellington aquifer. Communities, such as Oklahoma City, presently depending upon surface water supplies also maintain a well system drilled into this aquifer as a standby source of water in the event of drought. Lake Stanley Draper, a local surface water supply reservoir with a small portion of its drainage basin within the boundaries of Tinker AFB, serves a significant recreational function as well.

In 1989, approximately 26,000 military and civilian personnel worked at Tinker AFB. Of these, approximately 2,722 personnel occupied on-Base housing, which consisted of 530 family housing units and seven dormitories. At that time, 1,262 of these residents were children. Military personnel and their families who reside on Base represent the nearest receptors to releases from Tinker AFB.

The current land use at and near the Base is not expected to change because the facilities have decades of useful life remaining and the Base has an important and continuing mission.

However, other future land use scenarios and any human receptors associated with those scenarios may need to be considered.

6.2 Ecological Receptors

Tinker AFB lies within a grassland ecosystem, which is typically composed of grasses, forbes, and riparian (i.e., trees, shrubs, and vines associated with water courses) vegetation. This ecosystem has generally experienced fragmentation and disturbances as result of urbanization and industrialization at and near the Base. While no threatened or endangered plant species occur on the Base, the Oklahoma penstemon (*Penstemon oklahomensis*), identified as a rare plant under the Oklahoma Natural Heritage Inventory Program, thrives in several locations on Base. Tinker AFB policy considers rare species as if they were threatened or endangered and provides the same level of protection for these species.

In general, wildlife on the Base is typically tolerant of human activities and urban environments. No federal threatened or endangered species have been reported at the Base. However, one specie found on the Base, the Texas horned lizard (*Phrynosoma cornutum*), is a Federal Category 2 candidate specie and under review for consideration to be listed as threatened or endangered. Air Force policy (AFR 126-1) considers candidate species as threatened or endangered and provides the same level of protection.

The Oklahoma Department of Wildlife Conservation also lists several species within the state as Species of Special Concern. Information on these species suggests declining populations but information is inadequate to support listing, and additional monitoring of populations is needed to determine the species status. These species also receive protection by Tinker AFB as threatened or endangered species. Of these species, the Swainson's hawk (Buteo swainsoni) and the burrowing owl (Athene cunicularia) have been sighted on Tinker AFB. The Swainson hawk, a summer visitor and prairie/meadow inhabitant has been encountered Basewide. The burrowing owl has been known to inhabit the Air Field at the Base.

7.0 Action Levels

An "action level" is defined by EPA in proposed rule 40 CFR 264.521 (55 FR 30798; 7/27/90), "Corrective Action for Solid Waste Management Units (SWMU) at Hazardous Waste Management Facilities," as a health- and environment-based level, determined by EPA to be an indicator for protection of human health and the environment. In the preamble to this proposed rule, the focus of the RFI phase is defined as "characterizing the actual environmental problems at the facilities." As part of this characterization, a comparison of the contaminant concentrations to certain action levels should be made to determine if a significant release of hazardous constituents has occurred. This comparison is then used to determine if further action or corrective measures are required for a SWMU or an AOC. The preamble to the proposed rule states that the concept of action levels was introduced because of the need for "a trigger that will indicate the need for a Corrective Measures Study (CMS) and below which a CMS would not ordinarily be required" (55 FR 30798; 7/27/90). If constituent concentrations exceed certain action levels at a SWMU or an AOC, further action or a CMS may be warranted; if constituent concentrations are below action levels, a finding of no further action may be warranted. This chapter of the report presents the initial analytical data as compared to certain potential action levels.

Action levels are concentrations of constituents at or below which exposure to humans or the environment should not produce acute or chronic effects.

The action level information is presented in this chapter so that a constituent concentration at a sample location can be compared with its potential action level. Only constituents identified in the analysis are listed in the SWMU-8, FTA2 table. Table 7-1 shows the action levels for soil, water, and air as published in federal or state regulations, policies, guidance documents, or proposed rules.

The action levels listed in Table 7-1 are:

• **SWMU CAL** - The first set of action levels provided in the table are those taken from the proposed rule (40 CFR 264.521) and provided as Appendix A to the rule as "Examples of Concentrations Meeting Criteria for Action Levels." These levels are health-risk based and are provided as specific examples of levels below which corrective action would not be required.

KN/12565WMU8/5WMU8.7-1/08-26-94/F2 11:46em

Table 7-1 Action Level SWMU-8, FTA2, Tinker AFB

(Page 1 of 3)

		SWMU		MCL	USGS ^c Background	NAAOS	2-62A	2-63A	2-64A	2-65A
Parameters	Soil (mg/kg)	Water (mg/L)	Air (µg/m³)	Water (mg/L)	Soil (mg/kg)	Air (µo/m³)	Range (morks)	Range	Range	Range
Organics								(8.4	(Au Aun)	(mg/kg)
1,1,1-Trichoroethane	7,000	3.0	1,000	0.2			mat me7			
Bis(2-ethylhexyl)phthalate	S	0.003		9000			1900:-1900:	1.7		
Butyl benzyl phthalate	20,000	7.0		1.0				067.0.63	1.3-2.1	
Di-n-butyl phthalate	8,000	4.0						0.07.00	98.0-96.0	
Inorganics								11-800	0.061-1.4	
Aluminum					68 000		750 15 000	000 00		
Arsenic	8		75.05	0 005	7		00'sl.oc.		1,800-16,000	1,500-19,000
Barium	400						1.0-3.4	2	1.1-2.9	1.2-4.1
:				0.5	3,40		32-630	20-900	26-690	27-150
Beryllium	0.2	8E-06	0.0004	0.004	၈		0.94-1.3	1.4-1.9	14.19	0 000
Cadmium	8		0.0006	0.005	2		0.57.0.60	0 24 0 00		7-99-0
Chromium					9		500	3	0.80-1.1	0.74-1.1
Conner					2		414	3.9-20	8.5-19	6.7.37
				1.3*	85		1.1-22	9.9-18	8.5-22	5.2-22
Ilon					58,000		2,400-14,000	2,800-17,000	3,700-13,000	4,600-22,000
Lead				0.015	27	1.5	1.5-7.1	0.88-13.0	1.5-7.8	2991
Nickel	2,000	0.7		0.1	61		7.3-25	18-20	63-28	96.9
Silver	82				2		0.41			835
Zinc					۶		31.20	47.97		
								17.1.51	1.8-33	5.9-35

Table 7-1

(Page 2 of 3)

		SWMU CAL*		MCL	USGS ^c Background	Site Background ^d	NAAOS*	2-62A	2-628	2-63A	2.638	2.644	2.6.40	130 6	200
Parameters	Soil	Water	Air	Water	Soil	8	₹.				3	V	900	¥607	2656
- 11	(AuAm)	(וווומר)	(maxil)	(mg/L)	(mg/kg)	(mg/kg)	(m&m ₂)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Organics															
1,1-Dichloroethene	5		0.03	0.007					0.0057-0.006						
1,1,2-Trichloroethane	5	9000	9.0	0.005					0.0073-0.009						
1,2-Dichlorobenzene				9.0					17.19						
1,2-Dichloroethane	8.0		0.04	0.005					0.43-0.55						
1,2-Dichloropropane				0.005					0.007-0.0073						
1,3-Dichlorobenzene				9.0					0.048.0.083						
1,4-Dichlorobenzene				0.075					0.000						
Benzene				0.005					0.0054.0.0057						
Chlorobenzene	2,000	2.0	8	1.0					0 22 0 24						
Chloroform	001	900.0	20.0	1.0					0.0048						
Cis-1,2-dichloroethene	8.0		90.0	0.07					12.17		100				
Tetrachloroethene	10	0.0007	0.1	0.005					0 0044 0 0047		0.00		0.039		0.024
Toluene	20,000	0	7,000	0.					2000						
Trans-1,2-dichloroethene	6.0		20.0	1.0					44 0 14						
Trichloroethene	9			0.005					70.80		0000				
Inorganics									6.0		230.0		960.0		6600
Aluminum						on et			6 6 7 9						
Arsenic	8E+01		7E-05	900	21			2	3.0-1.0	35	8.0	5.9	7	2.8	0.95
Barium	4,000		9.0	2.0	6.400			S		910.0	1				
Cadmium	\$		90000	0 005	,				130.61	/8	80	88	8		0.24
					,					9900				-	

KN/1256/SWMU8/SWMU8.7-1/08-26-94/F2 11:46em

Table 7-1

(Page 3 of 3)

2-65B (mg/L) = 2.6 (mg/L) 2-65A 0.053 0.028 6.3 **8**2.0 (mg/L) 9 9 3.8 (mg/L) 0.0042 2-64A 0.075 0.087 0.021 8 = (mg/L) 2-63B 0.014 0.022 0.0 3.8 5 (mg/L) 2-63A 0.12 0.10 0.025 0.079 0.10 27 3.3 0.0031-0.004 0.029-0.040 0.043-0.049 0.021-0.024 2.7-2.9 (mg/L) 5.5-11 2-62B **Jo** 2-62A 0.021 5.3 Ξ NAAOS At (μg/m³) <u>.</u>55 Site Background^d Soil (mg/kg) 22,000 USGS^c Background Soil (mg/kg) 5 ß 1.2 æ 27 5 MCL Water (mg/L) 0.015 <u>..</u> -0.7 9.08 2 Air (49/m³) Water (mg/L) SWMU CAL* 0.7 Soil (mg/kg) 2,000 Inorganics (Continued) Parameters Nitrate/nitrite Chromium Selenium Copper Nickel Lead Zinc <u>ह</u>

*CAL - Corrective Action Levels.

*MCL - Maximum Contaminant Levels.

*JUSGS Background - United States Geological Survey Background.

*NAACOS - National Ambient Air Quality Standards.

*Action Level at the Tap.

**Month Average.

- **Maximum Contaminant Levels (MCL)** These values are provided from 40 CFR Subpart G, Sections 141.60 through 0.63 as promulgated under the Safe Drinking Water Act. These levels are designated for water media only.
- **USGS Background** These values are provided from the USGS report titled "Elemental Composition of Surficial Materials from Central Oklahoma" (USGS, 1991). These values represent the levels of metals which naturally occur in Central Oklahoma soils.
- **Background** These levels are provided where background could be determined. Where available, background concentrations are listed for metals in soil samples taken on site, which were thought to be unaffected by releases from a unit.
- National Ambient Air Quality Standards (NAAQS) These standards are published in 40 CFR Part 50 under the Clean Air Act and apply to point sources that emit a limited number of constituents to the air. The constituents regulated are nitrogen dioxide, sulphur dioxide, carbon monoxide, lead, ozone, and particulate matter. Currently, it is assumed that none of the SWMUs or AOCs emit these compounds in regulated quantities and no air samples have been taken which would allow for a valid comparison.
- Water Quality Standards (WQS) The WQS are the standards for surface water quality as established by the State of Oklahoma. These standards apply to point source discharges to surface waters and have been listed for those units adjacent to surface water.

Table 7-1 also gives a brief comparative evaluation of the data collected and the related action levels. The data for each detected compound are compared with the appropriate action level in order to identify those constituents (compounds) with concentrations exceeding the action levels. This identification of the compounds above the action levels provides an indication of a potential environmental problem at a specific site. In addition, this information indicates whether there is a need for conducting a CMS so that a corrective action can be implemented/undertaken at the site.

For constituents that have a SWMU CAL and an MCL for water, the MCL will be used for the comparison. Also, constituents that do not have a USGS background value will be compared to the site background value if available.

The data included in Table 7-1 is representative of the data presented in Chapter 5.0. For each soil boring, a range was identified and used in the comparison to the action levels. For

the groundwater samples, the results for the most recent sampling event were included in Table 7-1.

None of the constituents detected in the soil exceed the action levels or the existing background concentrations. Organics that were detected in the groundwater at FTA2 above MCLs include 1,1,2-TCE, 1,2-dichloropropane, 1,2-dichloroethane, benzene, chlorobenzene, trans-1,2-dichloroethane, 1,2-dichlorobenzene, 1,4-dichlorobenzene, cis-1,2-dichloroethene, and TCE. Barium, cadmium, chromium, lead, and selenium were also detected above MCLs.

8.0 Summary and Conclusions

8.1 Summary

The RFI was conducted to determine if the soils and groundwater in the vicinity of FTA2 have been impacted by organic or metals contaminants as a result of former operations at FTA2. Eight monitoring wells were installed in the vicinity of FTA2, consisting of four well pairs. Four wells were installed in the USZ and four wells were installed in the LSZ. Soil samples were collected from the borings drilled for the LSZ wells. Soil samples were not collected from within the perimeter of the SWMU, since a previous investigation had a characterization of this potential source area.

The previous investigation was performed in 1987 by the USACE (1988) found that soils directly beneath the former facility were impacted by low levels of hazardous constituents, including acetone, methylene chloride, bis(2-ethylhexyl)phthalate, although in some cases it was uncertain if some of the samples had been contaminated by field or laboratory sample handling procedures, since several blanks also contained the constituents. Low levels (<70 mg/kg) of several fuel-related but nonhazardous organic compounds were also detected. Concentrations of metals were found to be within the range measured in background samples.

Undisturbed soil samples recovered from the borings made for the RFI monitoring wells indicate that approximately the upper 10 to 15 feet of the geologic section below the site consists of reddish silty clay or clayey silt of the Hennessey Group. Thin layers of anhydrite or gypsum occur near the base of this zone. Underlying the Hennessey are interbedded fine sandstone and siltstone of the Garber Sandstone. A layer of hard siltstone appears to be traceable across the area at a depth of approximately 40 to 45 feet.

The water levels in the USZ wells indicate that the water table is approximately 15 feet below grade. The LSZ wells are completed in the upper part of the Garber-Wellington aquifer and water levels are at a depth of approximately 60 feet below grade. Water levels in the USZ appear to be several feet lower than the bed of a nearby southwest-flowing tributary of Crutcho Creek.

The RFI results indicated that the soils and groundwater in the vicinity of the SWMU contain little if any trace of fuels-related contaminants. The soils samples contained low levels of VOCs. Only 1,1,1-TCA was detected above the method detection limits, at a maximum

concentration of 6.7 μ g/kg, well below the CAL proposed in 40 CFR 264.521 (Chapter 7.0). In addition, three phthalate compounds were sporadically detected, all at concentrations below 3 mg/kg, and well below proposed CALs. Metals concentrations were within the range of background soil concentrations reported in a study of the four-county area around Tinker AFB by the USGS.

The groundwater samples collected from the eight monitoring wells indicate that the LSZ has not been affected. However, samples from the USZ indicate that the groundwater has been affected by several VOCs and SVOCs. The compounds do not appear to be related to operations at the former FTA2, as they are not fuel-related and were generally not detected in the soil samples analyzed in either this RFI or the 1987 investigation (USACE, 1988).

The samples from well 2-62B, located southeast of the FTA2, contained the greatest number and highest concentrations of constituents. The predominant constituents were TCE (maximum concentration 8,900 μ g/L) and cis-1,2-dichloroethene (maximum 1,700 μ g/L). Seven other volatiles were present at lesser concentrations. Three additional volatiles were detected below quantitation limits. In addition, three semivolatile compounds were detected in 2-62B, including 1,2-dichlorobenzene (1,900 μ g/L), 1,4-dichlorobenzene (290 μ g/L), and 1,3-dichlorobenzene (53 μ g/L).

Volatile constituents detected above CALs in well 2-62B included 1,1,2-TCA and tetrachloroethene. Other compounds, for which no CAL is available, were present in well 2-62B at concentrations which exceeded MCLs, including TCE, cis-1,2-dichloroethene, 1,2-dichloropropane, 1,2-DCA, benzene, and trans-1,2-DCE. Concentrations of two SVOCs were above MCLs. This includes 1,2-dichlorobenzene and 1,4- dichlorobenzene in well 2-62B.

TCE was detected in USZ wells 2-63B, 2-64B, and 2-65B at concentrations which also exceeded CALs.

The source of the contaminants in the USZ in this area does not appear to be FTA2, since the compounds in the groundwater are different from those which have been identified in the soils. Geotechnical analyses of a soil sample from this area, as discussed in Section 5.4.2, suggests that in general, near surface soils are fine grained (primarily silt and clay) with relatively low vertical permeability. The low permeability would tend to limit infiltration of surface water, which inhibits transport of contaminants to the subsurface.

There are no obvious upgradient sources for the solvent materials detected in the groundwater in the USZ in this area. The water levels in the USZ in the vicinity of FTA2 suggest that locally the water table gradient is significantly reduced compared to the Base-wide gradient. The gradient is relatively flat in the vicinity of wells 2-62B, 2-63B, and 2-64B. This could indicate the presents of a groundwater mound, suggesting the possibility of a local source of recharge to the aquifer. The most likely source of recharge in this area would be the small southwest-flowing tributary to Crutcho Creek located south of the FTA2.

Other evidence suggests that the source of contaminants could be to the east, in the vicinity of the culvert where the southwest-flowing tributary to Crutcho Creek emerges (Figure 3-1). The concentration of sulfate in well 2-62B is elevated compared to the other seven wells. This elevation is consistent with downward leakage of surface water from the tributary, which would contact the gypsum or anhydrite beds near the base of the silty clay unit.

Much of the protective upper silty clay unit has been removed by erosion by the tributary, which would facilitate loss of surface waters into the subsurface. If contaminated waters were present in this tributary, it appears possible that they could leak into the subsurface and contaminate the USZ. Potential sources of contaminants exist in the area drained by this tributary, including industrial facilities and ramp areas on the east side of the airfield.

8.2 Conclusions

Data collected for this RFI suggest that FTA2 is not the source of the hazardous constituents detected in samples from the monitoring wells installed in this area. There do not appear to be any significant ongoing releases from the FTA2. The specific VOCs and SVOCs detected in the groundwater samples suggest that these materials are more likely to have originated from other industrial processes, such as degreasing operations, rather than from activities in which only hydrocarbon fuels were involved. No such industrial operations exist or are known to have previously existed in the immediate area surrounding FTA2.

The gradient of the water table and the pattern of contaminant concentrations in the area around FTA2 suggests that the source of the contaminants would be northeast or east of well 2-62B. The only nearby potential source appears to be the southeast-flowing tributary which passes to the south of the SWMU and drains industrial areas located upstream. This tributary emerges from a culvert that passes beneath the airfield runways located to the east. Although the data are insufficient to definitely identify this area as the source of the contaminants, several factors suggest that this is a viable possibility:

- The water level in well 2-62B appears to be below the channel of the tributary.
- The anomalously high sulfate concentration in a groundwater sample from well 2-62B suggests leaching of gypsum or anhydrite, which was identified near the base of the silt/clay unit in soil samples from several of these wells.
- The water table appears to be anomalously flat in this area, suggesting a local source of recharge may exist.
- Much of the protective upper silt/clay unit has been removed by erosion of the tributary.
- Potential sources of the contaminants detected in the USZ in this area exist in upstream areas drained by this tributary.

Recommendations for additional work to determine the source of the contaminants detected in groundwater in the USZ in this area are discussed in Chapter 9.0.

9.0 Recommendations

As presented in Chapter 8.0, the preponderance of data collected from the RFI at FTA2, indicates that it is not likely to be the source of the hazardous constituents detected in the groundwater. Groundwater samples in the USZ have detected several VOCs and SVOCs. Predominant constituents included TCE and cis-1,2-dichloroethene. Seven other volatiles were present at lesser concentrations. None of these compounds appear to be directly related to the operations at the former FTA2. Only traces of fuel-related contaminants, known to be associated with the waste handling activities and operating practices at this SWMU were found in the soils and the groundwater (USZ only). Groundwater samples from well 2-62B, located southeast of the SWMU, contained the greatest number and highest concentrations of these constituents. The source of these constituents is not evident from the information obtained during this RFI.

The constituents detected in the dissolved phase at the former FTA2 are among the chemical constituents known as dense nonaqueous-phase liquids (DNAPL). Recently, EPA has acknowledged that DNAPL contaminants present unique site characterization and remediation problems. Adequate site characterization, while difficult when dealing with constituents, is paramount for making sound remediation decisions.

As previously discussed in Chapter 8.0, there are no obvious apparent sources for the subject dissolved constituents detected in the USZ that are currently visible at this SWMU nor evident in the past, based on a review of aerial photographs of the area. One potential source that is suspected is the small tributary to Crutcho Creek, located south of the SWMU. This tributary, which emerges from a culvert in the vicinity of this SWMU, drains towards the southwest into Crutcho Creek, and may provide recharge to the USZ, could be a secondary migration pathway, carrying these constituents from an upstream, unknown remote source. Evidence in the groundwater data also suggest that another source unrelated to FTA2 could be located upgradient of well 2-62B.

Based on the data and results from this RFI, further investigation is warranted in order to identify, if practicable, the source(s) of the constituents, previously described, which have been detected in the USZ. It is recommended that a source assessment be conducted for the purpose of identifying whether or not another source exists in the vicinity of FTA2. The approach of the proposed assessment would consist of the following:

- Review of plant records and/or interviews with Base personnel familiar with historical operations in this area
- Review of aerial photographs of the area around FTA2 for the possible detection of previously unidentified activities in the vicinity immediately upgradient
- The collection of groundwater samples from a minimum of four and a maximum
 of six locations using either temporary well points or a best available technology
 (BAT) system sampling devices driven using a truck mounted cone penetrometer
 testing (CPT) system
- Installation of monitoring well(s), which will be screened in the USZ at a location selected based on the results of the groundwater samples provided from the use of the CPT system.

Site-specific soil background samples were not collected, nor were the soil background values available for inclusion in this Phase I RFI report. Therefore, it is recommended that site-specific soil samples from uncontaminated areas be collected for analysis during the Phase II RFI field work. This additional information along with the USGS background values should be used in the Phase II report to distinguish site-related from background concentrations in a statistically significant manner. During the development of the Phase II RFI work plan, the number of background samples to be collected, the location of the soil borings, and the soil analysis to be performed on the samples should be determined for EPA approval.

A review of plant records and interviews with Base personnel familiar with historical operations in this area can be conducted to help ascertain whether an unidentified source may exist in this vicinity. If warranted, the locations of the CPT groundwater samples may be adjusted in the field accordingly from the information obtained. Similarly, aerial photographs of the area around FTA2 can be reviewed for previously unidentified activities in the vicinity immediately upgradient to well 2-62B.

The LSZ groundwater was found to be clean during the investigation, indicating that the vertical extent of groundwater contamination is known. However, the lateral extent of contamination was not determined in the USZ of the groundwater. It is recommended that the location, number, and depth of soil borings/monitoring wells be determined during the development of the Phase II RFI work plan.

With the objective of further defining the source and/or extent of the impacts to the USZ, additional groundwater samples should be collected cost effectively from four to six locations.

These locations will be selected during the development of a Phase II work plan based on the two potential source areas, identified in Chapter 8.0. Each groundwater sample can be screened for volatile organics using a field gas chromatograph (e.g., Foxboro Organic Vapor Analyzer) to provide qualitative "real-time" results. This would allow for adjustments to the number or locations of groundwater collection points to be made in the field. Sufficient sample volumes may also be collected from each location to be analyzed at an off-site laboratory for more quantitative results. Recommended analyses would include VOCs, SVOCs, TOC, and TPH.

Using this approach, the location of additional permanent monitoring (USZ) well(s) can be selected, based on the results of the assessment described above, to further delineate the extent of impacts in this area or assess the probable source area for the contaminants detected.

The number, location, and analysis to be performed on soil samples should be determined during the development of a Phase II RFI work plan for the site. Additional soil samples will be collected if needed.

10.0 References

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APPENDIX A BORING LOGS/WELL CONSTRUCTION DIAGRAMS

Client: TINKER AFB Project Name: TINKER 5001

Project Location: TINKER AFB, OKLAHOMA Project Number: 409832

SOIL BORING 2-65P

DRILLING AND SAMPLING INFORMATION

Boring Location: NORTH OF FIRE TRAINING SURFACE ELEV.(FT):

AREA

Logged By:

K. KIRSCHENMANN P. GUERREIN

TOTAL DEPTH(FT.): 100.0

Oote Storted: 11/2/ 11/2/93

Drilled By:

Date Completed: 11/3/93

GEOTECHNOLOGY, INC.

Drill Rig Type: CME-75

Drilling Method: 8" HOLLOW STEM AUGER AND

MUD ROTARY WITH 3-7/8" BIT

Sampling Method:

Notes: STRATIGRAPHIC TEST USED FOR GEOPHYSICAL LOGGING

DESCRIPTION	SAMPLE TYPE SAMPLE NO. IN. DRIVEN IN. RECOVERED PID, PPM USCS GRAPHIC LOG
SILTY CLAY	cl cl
– stiff; nard, pulldown pressure approximately 300 psi	0 10
— sandy and gravelly zone	25
	0 30
DRAFT RPS DRAFT PROJ. BY 11/24/93 CHK CHK	APPRV. DWG. 409832-A27 BY NO. Sheet 1 of 3

Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832

SOIL BORING 2-65P

DRILLING AND SAMPLING INFORMATION

Boring Location: NORTH OF FIRE TRAINING SURFACE ELEV.(FT):

AREA

TOTAL DEPTH(FT.): 100.0

Logged By: Drilled By:

K. KIRSCHENMANN P. GUERREIN

Date Started: 11/2/93

Date Completed: 11/3/93

GEOTECHNOLOGY, INC.

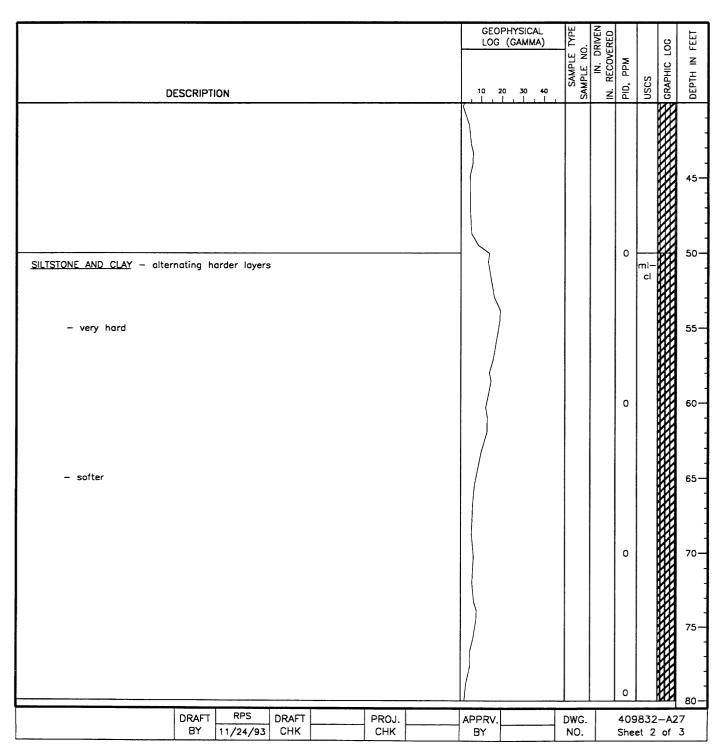
Drill Rig Type: CME-75

Drilling Method: 8" HOLLOW STEM AUGER AND

MUD ROTARY WITH 3-7/8" BIT

Sampling Method:

Notes: STRATIGRAPHIC TEST USED FOR GEOPHYSICAL LOGGING



Client: TINKER AFB Project Location: TINKER AFB, OKLAHOMA SOIL BORING 2-65P Project Name: TINKER 5001 Project Number: 409832

DRILLING AND SAMPLING INFORMATION

Boring Location: NORTH OF FIRE TRAINING SURFACE ELEV.(FT):

AREA

TOTAL DEPTH(FT.): 100.0

Logged By:

K. KIRSCHENMANN Date Started: 11/2/93

P. GUERREIN Drilled By:

Date Completed: 11/3/93

GEOTECHNOLOGY, INC.

Drill Rig Type: CME-75

Drilling Method: 8" HOLLOW STEM AUGER AND

MUD ROTARY WITH 3-7/8" BIT

Sampling Method:

Notes: STRATIGRAPHIC TEST USED FOR GEOPHYSICAL LOGGING

DESCRIPTION	GEOPHYSICAL LOG (GAMMA)	SAMPLE TYPE SAMPLE NO.	IN. DRIVEN IN. RECOVERED PID, PPM	USCS GRAPHIC LOG DEPTH IN FEET	טברוח וא רכבו
SILTY CLAY				cl 85	5
— very hard			0	90	1
TOTAL DEPTH = 100.0 FEET				100	-
				110	1
DRAFT RPS DRAFT PROJ. PROJ.	APPRV.	DWG.	409 She	115 120 832–A27 et 3 of 3	1

Logged By:

Drilled By:

Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832

MONITORING WELL 2-62A

DRILLING AND SAMPLING INFORMATION

Boring Location: EAST SIDE OF FIRE TRAINING AREA 2

SURFACE ELEV.(FT): 1246.213

TOTAL DEPTH(FT.): 70

Date Started: 11/22/93 Date Completed: 11/29/93

D. MEYER GEOTECHNOLOGY. INC.

Drill Rig Type: CME-75

Drilling Method: 8" AND 12" HOLLOW STEM AUGERS AND MUD ROTORY WITH 5-5/8" TRICONE ROCK BIT

Sampling Method: 3"x5' CONTINUOUS SAMPLER

M. WILSON

Notes: N 150447.890, E 2182152.166

WELL COMPLETION DATA

Elev-Top of Casing(ft.):

1. Surf Casing-I.D.(in.):8 Centralizers-Type: S.Steel Depths(ft.): 13

2. Riser Pipe-I.D.(in.); 2

Centralizers-Type: S.Steel Depths(ft.): 24, 53 3. Screen Dia.(in.): 2

Depth Interval(ft.):53.8-63.7 Slot Size(in.): .010 Centralizers-Type:

Conc. Pod Size: 4'x4'x6"

Ref. Datum: MSL

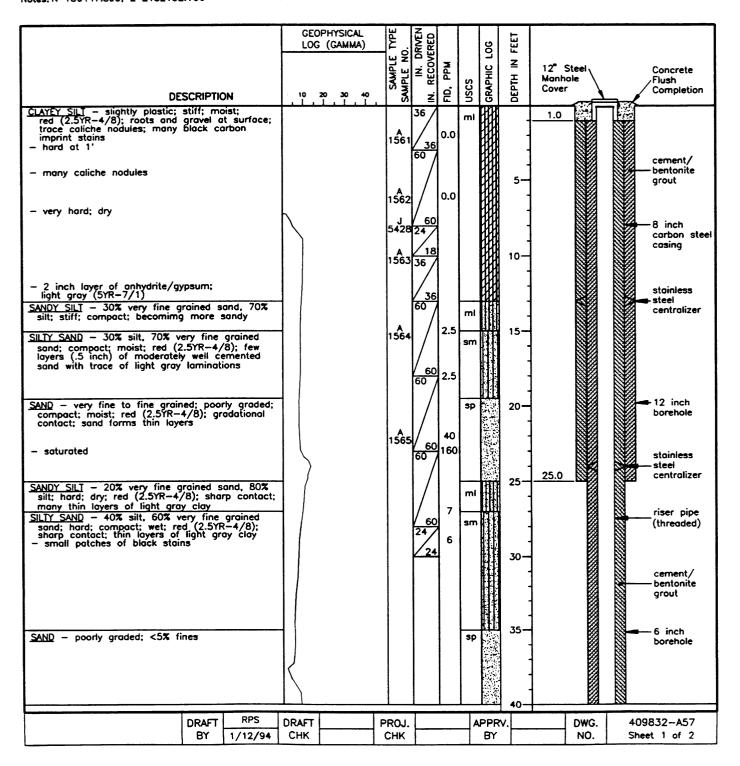
Depth(ft.): 25 Type: Carbon Steel

Depth(ft.): 53.8 Type: S.Steel

Type: S.Steel Wire Wound

Depths(ft.):

4. Filter Pock Type: Silica Sand Depth Interval(ft.): 52.0-65.0



Logged By:

Drilled By:

Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832

MONITORING WELL 2-62A

DRILLING AND SAMPLING INFORMATION

Boring Location: EAST SIDE OF FIRE TRAINING AREA 2

SURFACE ELEV.(FT): 1246.213 TOTAL DEPTH(FT.): 70

M. WILSON Date Started: D. MEYER Date Completed:

11/22/93 11/29/93

GEOTECHNOLOGY. INC.

Drill Rig Type: CME-75

Drilling Method: 8" AND 12" HOLLOW STEM AUGERS AND MUD ROTORY WITH 5-5/8" TRICONE ROCK BIT Sampling Method: 3"x5' CONTINUOUS SAMPLER

Notes: N 150447.890, E 2182152.166

WELL COMPLETION DATA

Elev-Top of Casing(ft.):

1. Surf Casing-I.D.(in.):8 Centralizers-Type: S.Steel Depths(ft.): 13

2. Riser Pipe-I.D.(in.): 2

Centralizers-Type: S.Steel Depths(ft.): 24, 53
3. Screen Dia.(in.): 2 Type: S.Steel Wire V Depth Interval(ft.):53.8-63.7 Slot Size(in.): .010 Centralizers-Type:

4. Filter Pack Type: Silica Sand Depth Interval(ft.): 52.0-65.0 Conc. Pad Size: 4'x4'x6"

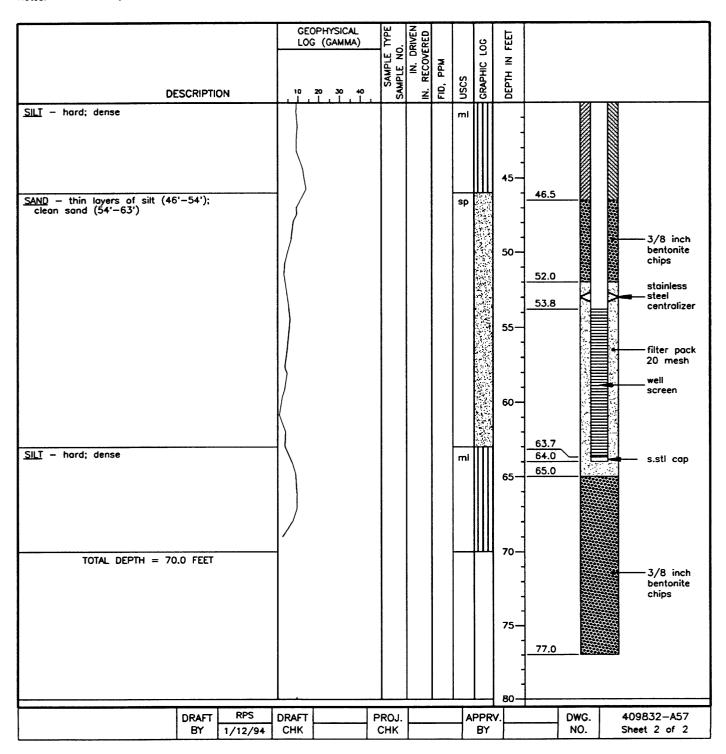
Ref. Datum: MSL

Depth(ft.): 25 Type: Carbon Steel

Depth(ft.): 53.8 Type: S.Steel

Type: S.Steel Wire Wound

Depths(ft.):



Logged By:

Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832

MONITORING WELL 2-63A

DRILLING AND SAMPLING INFORMATION

Boring Location: EAST SIDE OF FIRE TRAINING AREA 2

SURFACE ELEV.(FT): 1243.387 TOTAL DEPTH(FT.): 67

Drilled By: D. MEYER

11/19/93 Date Started: Date Completed: 11/23/93

GEOTECHNOLOGY. INC.

Drill Rig Type: CME-75

Drilling Method: 8" AND 12" HOLLOW STEM AUGERS AND MUD ROTORY WITH 5-5/8" TRICONE ROCK BIT

Sampling Method: 3"x5' CONTINUOUS SAMPLER

M. WILSON

AND 1-1/2"x2' SPLIT SPOON Notes: N 150389.964, E 2182043.019

WELL COMPLETION DATA

Elev-Top of Casing(ft.):

1. Surf Casing-I.D.(in.):8 Centralizers-Type: S.Steel

2. Riser Pipe-I.D.(in.): 2

Centralizers-Type: S.Steel
3. Screen Dia.(in.): 2 Depth Interval(ft.):53.0-63.0 Slot Size(in.): .010 Centralizers-Type:

4. Filter Pack Type: Silica Sand Depth Interval(ft.): 51-64

Conc. Pad Size: 4'x4'x6"

Ref. Datum: MSL

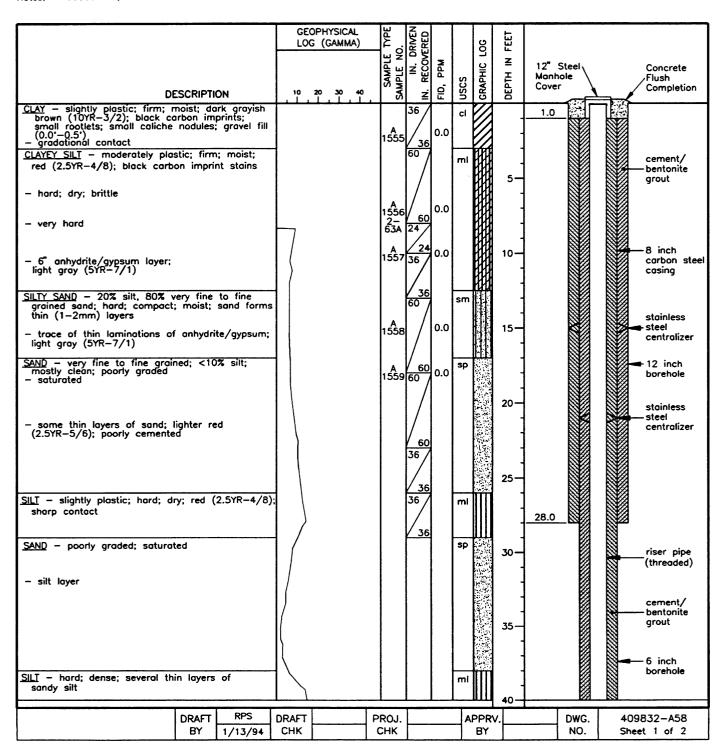
Depth(ft.): 28 Type: Carbon Steel

Depths(ft.): 15

Depth(ft.): 53 Type: S.Steel

Depths(ft.): 21, 51 Type: S.Steel Wire Wound

Depths(ft.):



Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832

MONITORING WELL 2-63A

DRILLING AND SAMPLING INFORMATION

Boring Location: EAST SIDE OF FIRE TRAINING AREA 2

SURFACE ELEV.(FT): 1243.387 TOTAL DEPTH(FT.): 67

11/19/93 M. WILSON Logged By: Date Started: D. MEYER Date Completed: Drilled By: 11/23/93

GEOTECHNOLOGY. INC.

Drill Rig Type: CME-75

Drilling Method: 8" AND 12" HOLLOW STEM AUGERS AND MUD ROTORY WITH 5-5/8" TRICONE ROCK BIT

Sampling Method: 3"x5' CONTINUOUS SAMPLER AND 1-1/2"x2' SPLIT SPOON

Notes: N 150389.964, E 2182043.019

WELL COMPLETION DATA

Elev-Top of Casing(ft.):

1. Surf Casing-I.D.(in.):8 Centralizers-Type: S.Steel

2. Riser Pipe-I.D.(in.): 2 Centralizers-Type: S.Steel

3. Screen Dia.(in.): Depth Interval(ft.):53.0-63.0 Slot Size(in.): .010 Centralizers-Type:

Conc. Pad Size: 4'x4'x6"

Ref. Datum: MSL

Depth(ft.): 28 Type: Carbon Steel

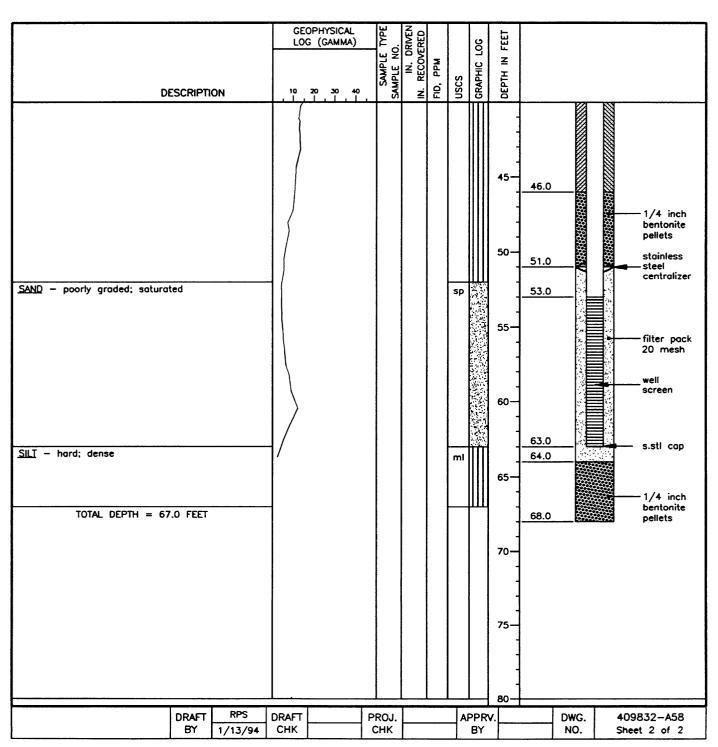
Depths(ft.): 15

Depth(ft.): 53 Type: S.Steel

Depths(ft.): 21, 51 Type: S.Steel Wire Wound

Depths(ft.):

4. Filter Pack Type: Silica Sand Depth Interval(ft.): 51-64



Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832

MONITORING WELL 2-64A

WELL COMPLETION DATA

DRILLING AND SAMPLING INFORMATION

Boring Location: NORTH SIDE OF FIRE TRAINING AREA 2

SURFACE ELEV.(FT): 1246.052 TOTAL DEPTH(FT.): 75

Logged By: M. WILSON Drilled By:

Drill Rig Type: CME-75

Date Started: Date Completed:

1. Surf Casing-I.D.(in.):8 11/18/93 11/22/93

D. MEYER

AND MUD ROTORY WITH 5-5/8" TRICONE ROCK BIT

Drilling Method: 8" AND 12" HOLLOW STEM AUGERS

Sampling Method: 3"x5' CONTINUOUS SAMPLER

GEOTECHNOLOGY. INC.

2. Riser Pipe-I.D.(in.): 2 Centralizers-Type: S.Steel

3. Screen Dia.(in.): Depth Interval(ft.):56-66 Centralizers-Type:

Elev-Top of Casing(ft.):

Conc. Pad Size: 4'x4'x6"

Ref. Datum: MSL

Depth(ft.): 30

Type: Carbon Steel Centralizers-Type: S.Steel Depths(ft.): 16

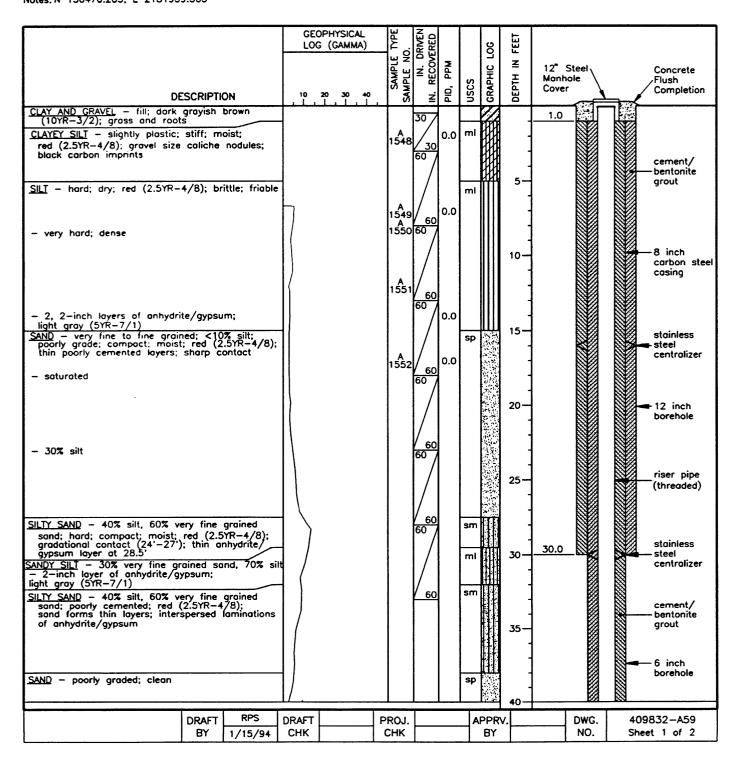
Type: S.Steel Depth(ft.): 56 Depths(ft.): 30, 54

Type: S.Steel Wire Wound Slot Size(in.): .010

Depths(ft.):

4. Filter Pack Type:Silica Sand Depth Interval(ft.): 54.5-67.0

Notes: N 150470.205, E 2181959.365



Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832

MONITORING WELL 2-64A

DRILLING AND SAMPLING INFORMATION

Boring Location: NORTH SIDE OF FIRE TRAINING AREA 2

SURFACE ELEV.(FT): 1246.052 TOTAL DEPTH(FT.): 75

M. WILSON Logged By: Date Started: D. MEYER Drilled By:

11/18/93 Date Completed: 11/22/93

GEOTECHNOLOGY. INC.

Drill Rig Type: CME-75

Drilling Method: 8" AND 12" HOLLOW STEM AUGERS AND MUD ROTORY WITH 5-5/8" TRICONE ROCK BIT

Sampling Method: 3"x5' CONTINUOUS SAMPLER

Notes: N 150470.205, E 2181959.365

WELL COMPLETION DATA

Elev-Top of Casing(ft.):

1. Surf Casing-I.D.(in.):8 Centralizers-Type: S.Steel

2. Riser Pipe-I.D.(in.): 2 Centralizers-Type: S.Steel

3. Screen Dia.(in.): Depth Interval(ft.):56-66

Centralizers-Type:

Conc. Pad Size: 4'x4'x6"

Ref. Datum: MSL

Depth(ft.): 30 Type: Carbon Steel

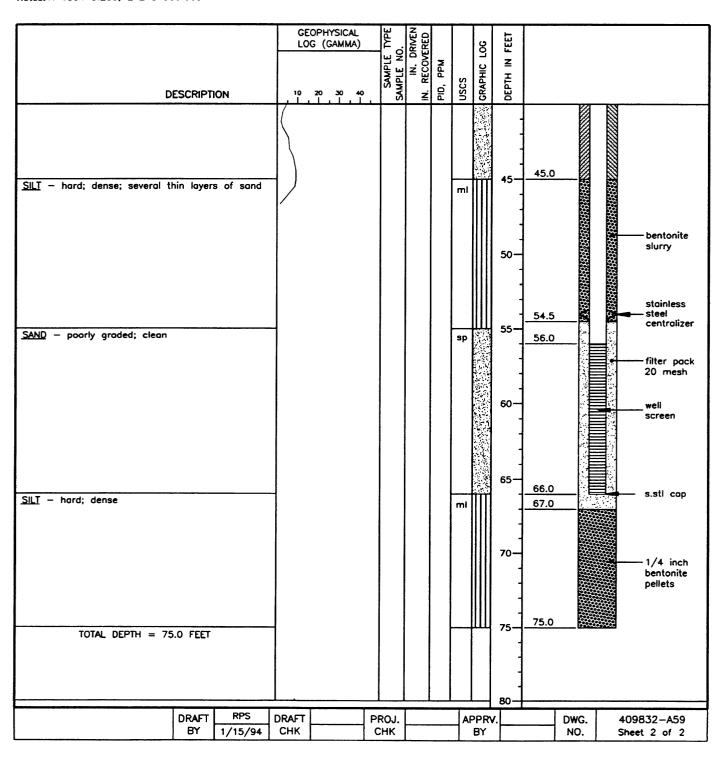
Depths(ft.): 16

Depth(ft.): 56 Type: S.Steel

Depths(ft.): 30, 54 Type: S.Steel Wire Wound Slot Size(in.): .010

Depths(ft.):

4. Filter Pack Type: Silica Sand Depth Interval(ft.): 54.5-67.0



Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832

MONITORING WELL 2-65A

DRILLING AND SAMPLING INFORMATION

Boring Location: NORTHEAST OF FIRE TRAINING AREA 2

SURFACE ELEV.(FT): 1250.976 TOTAL DEPTH(FT.): 79

M. WILSON Logged By: Drilled By:

D. MEYER

11/15/93 Date Started: Date Completed:

11/19/93

GEOTECHNOLOGY. INC.

Drill Rig Type: CME-75

Drilling Method: 8" AND 12" HOLLOW STEM AUGERS

Sampling Method: 3"x5' CONTINUOUS SAMPLER

AND 1-1/2"x2' SPLIT SPOON Notes: N 150698.281, E 2182189.884 Elev-Top of Casing(ft.):

1. Surf Casing-I.D.(in.):8 Centralizers-Type:

2. Riser Pipe-I.D.(in.): 2 Centralizers-Type: S.Steel

3. Screen Dia.(in.): Depth Interval(ft.):66-76 Centralizers-Type:

4. Filter Pock Type:Silica Sand Conc. Pad Size: 4'x4'x6"

Ref. Datum: MSL

Depth(ft.): 55 Type: Carbon Steel

Depths(ft.):

WELL COMPLETION DATA

Depth(ft.): 66 Type: S.Steel

Depths(ft.): 61

Type: S.Steel Wire Wound Slot Size(in.): .010

Depths(ft.):

Depth Interval(ft.): 64-77

			1	1		-		r	
	GEOPHY LOG (G		E TYPE NO.	DRIVEN			LOG FEET		
DESCRIPTION	10 20	30 40	SAMPLE SAMPLE NO	IN. DRIVEN IN. RECOVERED	FID, PPIM	SOSO	GRAPHIC I	12" Steel Manhole Cover	Concrete Flush Completion
CLAY — moderately plastic; stiff; moist; grayish brown (5YR-4/2); grass and roots				48 /		cl		1.0	
- gradational contact			1540	/					
GRAYELLY CLAY — slightly plastic; 20% granule size gravel; firm; moist; red (2.5YR-4/8); rootlets; black carbon imprint — hard; dry; brittle — 50% light red caliche — 10% gravel	<u> </u>		A 1541	48 60	0.0	cl	5-		cement/ bentonite grout
- 30%-40% sand CLAYEY SILT - nonplastic; very hard; brittle; dry;				60 60	-	E I	10-		8 inch
red (2.5YR-4/8); sharp contact - dense; compact			1542	I /	0.0				casing
SANDY SILT - 25% very fine grained sand; 75% silt; loose; dry; red (2.57R-4/8); thin silt layers (0.1-0.5" thick)			1543	60 60	0.0	ml	15-		12 inch borehole
 few thin seams of very fine grained sand; gray hard 			1544	36 30 30			20-		
SILTY SAND — 30% silt, 70% very fine grained sand; compact; stiff; dry; red (2.5YR-4/8); hard to drill				9/9		sm	25-		riser pipe (threaded)
- saturated			1546	24 /			30-		
SAND - fine grained; <10% fines; poorly graded; compact; saturated; red (2.5YR-4/8)])			24		sp	(A)		cement/ bentonite
SILTY SAND - 30% silt, 70% very fine grained sand; compact; saturated; red (2.5YR-4/8)](sm (35-		grout
CLAYEY GRAVELLY SAND - 30% clay, 40% gravel, 30% fine grained sand; loose; saturated; red (2.5YR-4/8)]\			/		gc .			
SAND — fine grained; poorly graded; compact; saturated; red (2.5YR-4/8)	<u> </u>			60		sp	40-		
DRAFT RPS	DRAFT		ROJ.			⊣	PRV.	DWG.	409832-A60
BY 1/15/94	СНК		CHK	<u> </u>		E	BY	NO.	Sheet 1 of 2

Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832

MONITORING WELL 2-65A

DRILLING AND SAMPLING INFORMATION

Boring Location: NORTHEAST OF FIRE TRAINING AREA 2

SURFACE ELEV.(FT): 1250.976 TOTAL DEPTH(FT.): 79

Logged By: Drilled By:

Drill Rig Type:

M. WILSON D. MEYER

Date Started: Date Completed:

11/15/93 11/19/93

GEOTECHNOLOGY. INC.

CME-75 Drilling Method: 8" AND 12" HOLLOW STEM AUGERS

Sampling Method: 3"x5' CONTINUOUS SAMPLER

AND 1-1/2"x2' SPLIT SPOON Notes: N 150698.281, E 2182189.884

WELL COMPLETION DATA

Elev-Top of Casing(ft.):

1. Surf Casing-I.D.(in.):8 Centralizers-Type:

2. Riser Pipe-I.D.(in.): 2 Centralizers-Type: S.Steel

3. Screen Dia.(in.): 2 Depth interval(ft.):66-76

Centralizers-Type:

Conc. Pad Size: 4'x4'x6"

Ref. Datum: MSL

Depth(ft.): 55 Type: Carbon Steel

Depths(ft.):

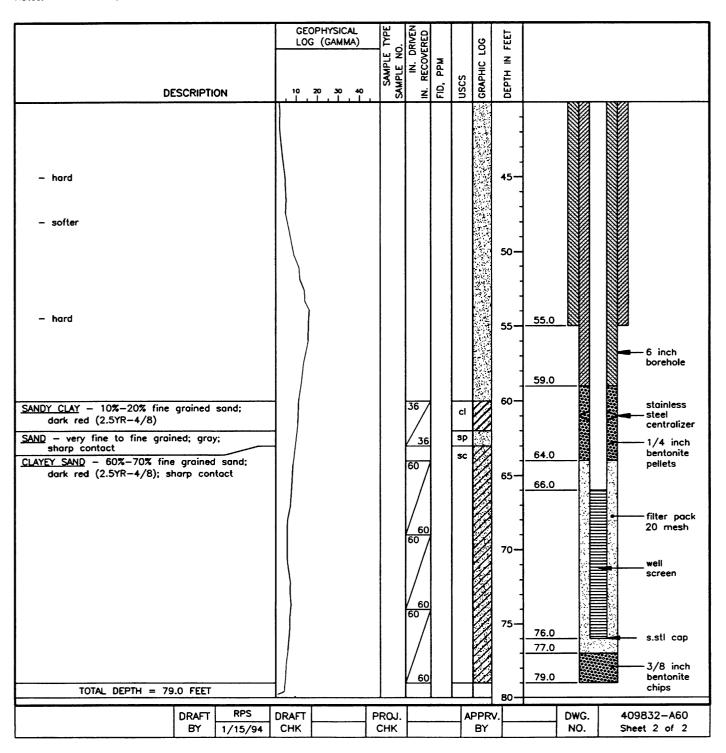
Depth(ft.): 66 Type: S.Steel

Depths(ft.): 61

Type: S.Steel Wire Wound

Slot Size(in.): .010 Depths(ft.):

4. Filter Pack Type: Silica Sand Depth Interval(ft.): 64-77



Logged By:

Drilled By:

SURFACE ELEV.(FT): 1245.940

Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Boring Location: EAST OF

Drill Rig Type: CME-75

Project Number: 409832

11/9/93

11/9/93

WELL COMPLETION DATA

Elev-Top of Casing(ft.):

1. Riser Pipe-I.D.(in.): 2

Centralizers-Type:

2. Screen Dia.(in.): Depth Interval(ft.):14-24 Centralizers-Type: S.Steel

Type: S.Steel Millslotted Slot Size(in.): .010 Depths(ft.):23

Ref. Datum: MSL

Type:S.Steel

MONITORING WELL 2-62B

Depth(ft.): 14

Depths(ft.):

3. Filter Pack Type: Silica Sand Depth Interval(ft.): 12-25

Conc. Pad Size: 4'x4'x6"

Drilling Method: 8" HOLLOW STEM AUGER

Sampling Method: 3"x5' CONTINUOUS SAMPLER

P. GUERREIN

GEOTECHNOLOGY. INC.

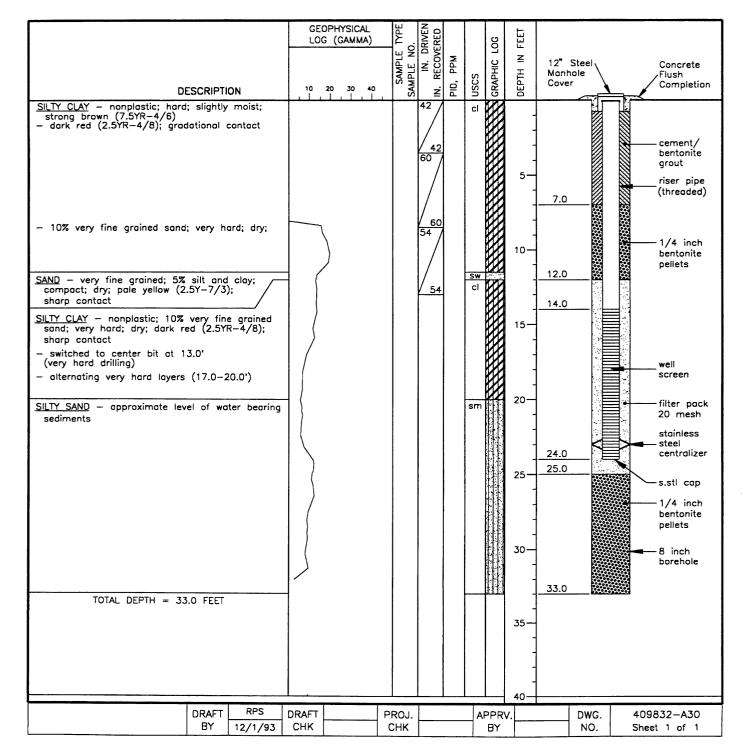
DRILLING AND SAMPLING INFORMATION

K. KIRSCHENMANN Date Started:

FIRE TRAINING AREA TOTAL DEPTH(FT.): 33.0

Date Completed:

Notes: N 150444.517, E 2182140.558



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Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832 MONITORING WELL 2-63B

WELL COMPLETION DATA

DRILLING AND SAMPLING INFORMATION

Boring Location: EAST OF

n: EAST OF SURFACE ELEV.(FT): 1243.284
FIRE TRAINING AREA TOTAL DEPTH(FT.): 29.0

.

K. KIRSCHENMANN Date Started:

Logged By:

Drill Rig Type:

P. GUERREIN Date Comple

11/8/93 11/8/93

Drilled By:

P. GUERREIN Da GEOTECHNOLOGY. INC.

Date Completed:

Centralizers-Type:

2. Screen Dia.(in.): 2

Elev-Top of Casing(ft.):

1. Riser Pipe-I.D.(in.): 2

3. Filter Pack Type: Silica Sand Conc. Pad Size: 4'x4'x6"

Depth Interval(ft.):18-23 Slot Centralizers-Type: S.Steel Dep Ref. Datum: MSL

Depth(ft.): 18 Type:S.Steel

Depths(ft.):

Type: S.Steel Millslotted Slot Size(in.): .010 Depths(ft.): 22

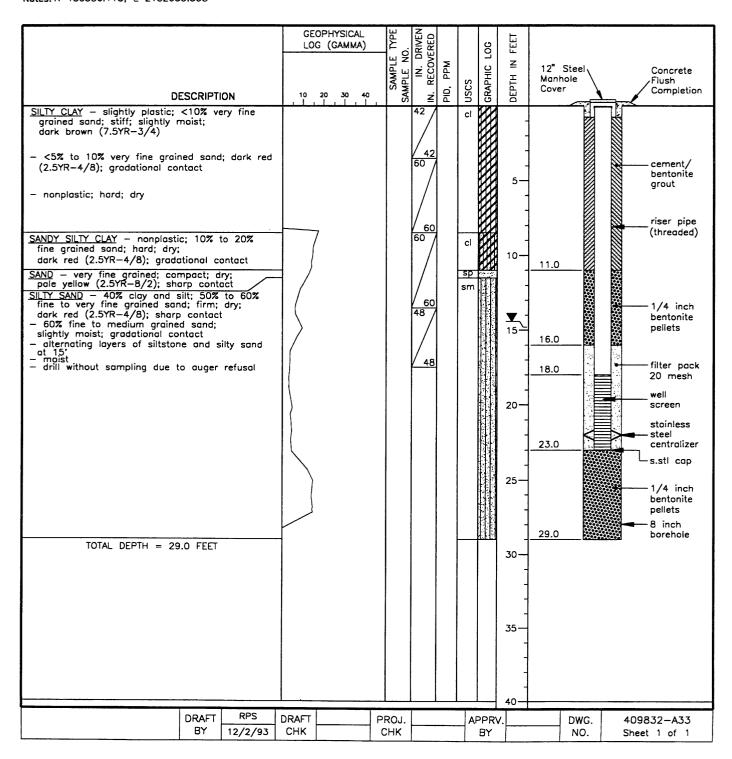
Depth Interval(ft.): 16-23

Notes: N 150386.113, E 2182035.358

CME-75

Drilling Method: 8" HOLLOW STEM AUGER

Sampling Method: 3"x5' CONTINUOUS SAMPLER



Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832

MONITORING WELL 2-64B

DRILLING AND SAMPLING INFORMATION

Boring Location: NORTHEAST OF

SURFACE ELEV.(FT): 1245.586

FIRE TRAINING AREA TOTAL DEPTH(FT.): 33.0

Logged By: Drilled By:

P. GUERREIN

K. KIRSCHENMANN Date Started: Date Completed: 11/9/93 11/9/93

GEOTECHNOLOGY. INC.

Drill Rig Type: CME-75

Drilling Method: 8" HOLLOW STEM AUGER

Sampling Method: 3"x5' CONTINUOUS SAMPLER

Notes: N 150467.403, E 2181967.757

WELL COMPLETION DATA

Elev-Top of Casing(ft.):

1. Riser Pipe-I.D.(in.): 2

Centralizers-Type:

2. Screen Dia.(in.): Depth Interval(ft.): 16-26

Centralizers-Type: S.Steel

3. Filter Pack Type: Silica Sand Depth Interval(ft.): 14-27

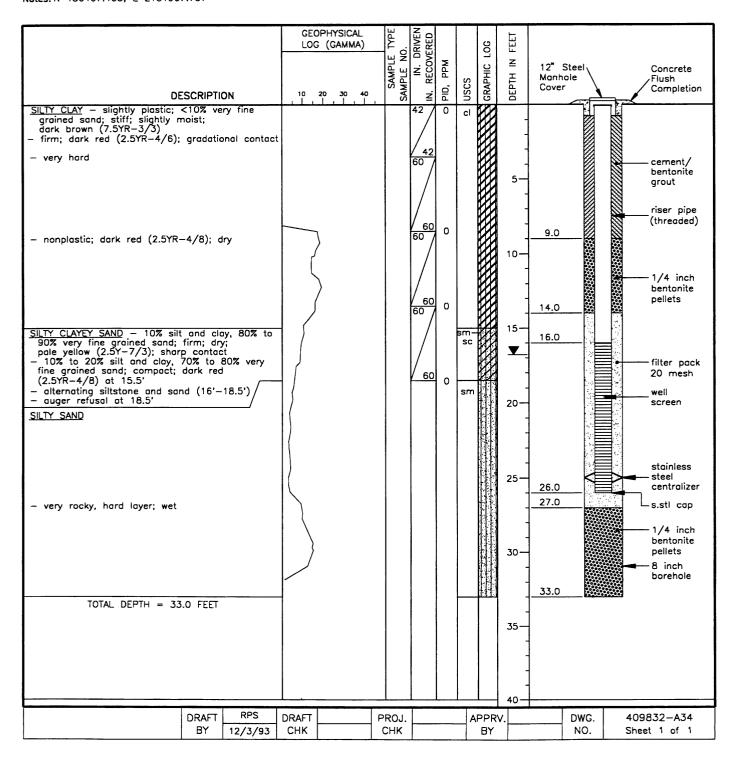
Conc. Pad Size: 4'x4'x6"

Ref. Datum: MSL

Depth(ft.): 16 Type:S.Steel

Depths(ft.):

Type: S.Steel Millslotted Slot Size(in.): .010 Depths(ft.): 25



Project Location: TINKER AFB, OKLAHOMA

11/5/93

11/5/93

Project Name: TINKER 5001

Project Number: 409832

MONITORING WELL

DRILLING AND SAMPLING INFORMATION

Boring Location: NORTHEAST OF

SURFACE ELEV.(FT): 1250.812 FIRE TRAINING AREA TOTAL DEPTH(FT.): 49.0

Logged By: Drilled By:

P. GUERREIN

K. KIRSCHENMANN Date Started: Date Completed:

GEOTECHNOLOGY. INC.

Drill Rig Type: CME-75

Drilling Method: 8" HOLLOW STEM AUGER

Sampling Method: $3^{\prime\prime}x5^{\prime}$ CONTINUOUS SAMPLER

Notes: NO ANALYTICAL SAMPLES TAKEN N 150712.875, E 2182183.201

WELL COMPLETION DATA

Elev-Top of Casing(ft.):

1. Riser Pipe-I.D.(in.): 2 Centralizers-Type: S.Steel

2. Screen Dia.(in.): 2 Depth Interval(ft.):37-47

Centralizers-Type: S.Steel

Conc. Pad Size: 4'x4'x6"

3. Filter Pack Type: Silica Sand

Ref. Datum: MSL

Depth(ft.): 37 Type:S.Steel

Depths(ft.): 25

Type: S.Steel Millslotted Slot Size(in.): .010

Depths(ft.): 46

Depth Interval(ft.): 35-49

		1 1-2	T T			· · · · · · · · · · · · · · · · · · ·
	GEOPHYSICAL	SAMPLE NO. IN. DRIVEN IN. RECOVERED PID, PPM	ΙΙ,	FEET		
	LOG (GAMMA)	니는 이불 뛰				
		MPLE IN I		ا ≥	12" Steel	Concrete
		불발목없도	USCS	DEPTH	Manhole	/Flush
		SAME SAME	nscs	5 6	Cover	✓ Completion
DESCRIPTION	10 20 30 40	S Z Z	5 2	5 0		
SILTY CLAY - slightly plastic; <5% very fine		42 /	cl	2 1		
grained sand; stiff; slightly moist; dark brown (7.5YR-3/4); organic rich		/	1 12	71 -		
SILTY SANDY CLAY - stightly plastic; 10% fine		/	l R			3
grained sand; hard; slightly moist;		42	cl	X -		
dark red (2.5YR-4/6); gradational contact		60 /		KA -		3
 black nodules 		/		X		3
		/		5-		
SILTY CLAY - nonplastic; hard; dry; dark red		1 1/1		7		
(2.5YR-4/8); gradational contact		1 1/ 1	l ci ka	7 -		riser pipe
•		60	1 1/1	21 -		(threaded)
		60	1 12	1 1 .		3
	/					3
		/		10-		\$
	(/	1 12	7		3
	\	/		X 1 -		\$
	\	60	1 12	9 1 -		cement/
	/	60	l Ma			bentonite
			1 12	31		grout
	\	1 1 /1	l Ma	15-		3
]	1 1/1	1 19	2 1 11 -		3
	/	1 1/ 1	1 1/2	-		3
		/ 60		7 0 -		3
	\	/ 60 60 /				8 inch
SAND - very fine to fine grained; compact;	1)		sw	Val		borehole
slightly moist; pale yellow (2.5Y-8/2);	/		cı	20-		3
sharp contact		/		-		
SILTY CLAY — nonplastic; very hard; dry; dark red (2.5YR-4/6); sharp contact	(1 1/ 1		7 1 -		3
dark red (2.57K-4/6); sharp contact	(/				
00 T/ 0410 70T (\	60 /	sm	14		3
SILTY SAND — 30% silt and clay, 70% fine grained sand; compact; dry; dark red			ci d	7		stainless
(2.5YR-4/6); gradational contact				25-	i 🛭 🕅 🤻	steel centralizer
SANDY SILTY CLAY - nonplastic; 10% to 25%		1 1/1				Certifulizer
very fine to fine grained sand; stiff; dry;	(1 1/ 1				
dark red (2.5YR-4/6); sharp contact		/		80 .		
	- (V 60				3
SILTY SAND — 50% silt and clay, 50% fine grained sand; firm; dry; dark red)		sm			
(2.5YR-4/6); gradational contact	/	1 1 /1		30-	1 🛭	3
(=		/				3
		/		M .		3
	}	/			33.0	3
	(/ 60 18 /				1/4 inch
)	18			35.0	
	1/		1 1	35-		pellets
				[H] ·	1 [8] [
				H .	37.0	filter pack 20 mesh
	[]					20 mean
	1/					well
						screen
	· · · · · · · · · · · · · · · · · · ·			40-		
DRAFT RPS		PROJ.		PRV	DWG.	409832-A35
BY 12/9/93	CHK	CHK	E	3Y	NO.	Sheet 1 of 2

Project Location: TINKER AFB, OKLAHOMA

Project Name: TINKER 5001

Project Number: 409832

MONITORING WELL

DRILLING AND SAMPLING INFORMATION

Boring Location: NORTHEAST OF

SURFACE ELEV.(FT): 1250.812

FIRE TRAINING AREA TOTAL DEPTH(FT.): 49.0

Logged By: Drilled By:

P. GUERREIN

K. KIRSCHENMANN Date Started: Date Completed: 11/5/93 11/5/93

GEOTECHNOLOGY. INC.

Drill Rig Type: CME-75

Drilling Method: 8" HOLLOW STEM AUGER

Sampling Method: 3"x5' CONTINUOUS SAMPLER

Notes: NO ANALYTICAL SAMPLES TAKEN N 150712.875, E 2182183.201

WELL COMPLETION DATA

Elev-Top of Casing(ft.):

1. Riser Pipe-I.D.(in.): 2

Centralizers-Type: S.Steel 2. Screen Dia.(in.): 2

Depth Interval(ft.):37-47

Centralizers-Type: S.Steel

3. Filter Pack Type: Silica Sand Depth Interval(ft.): 35-49

Conc. Pad Size: 4'x4'x6"

Ref. Datum: MSL

Depth(ft.): 37 Type:S.Steel

Depths(ft.): 25

Type: S.Steel Millslotted Slot Size(in.): .010

Depths(ft.): 46

N 150712.875, E 2182183.201					
	GEOPHYSICAL LOG (GAMMA)	SAMPLE TYPE SAMPLE NO. IN. DRIVEN IN. RECOVERED		FEET	
	LOG (GAMMA)	S S S	507		
		M 등 등 등	A 일	<u> </u>	
a Francisco V	10 20 30 40	SAMP SA	PID, PPM USCS GRAPHIC	DEPTH IN	
DESCRIPTION	10 20 30 40	S			
				1	filter pack
				1	filter pack 20 mesh
	1			1	
	1			45—	stainless
				4	∠ steel
	}			47.0	
	,			1 1	∟s.stl cop
TOTAL DEPTH = 49.0 FEET			131.63	49.0	<u> </u>
TOTAL DEPTH = 45.0 FEET				50—	
]	
				55-	
				-	
				-	
				_	
				60-	
				4	
				65—	
				-	
				-	
				70-	
				~~]	
]]	
				75—	
				1	
	l			80-	
DRAFT RPS	DRAFT	PROJ.	APPR		DWG. 409832-A35
BY 12/9/93		СНК	BY		NO. Sheet 2 of 2
	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·			

APPENDIX B GEOPHYSICAL LOGS

APPENDIX C DATA TABLES, CERTIFICATES OF ANALYSIS, CHAIN-OF-CUSTODY

ANALYTICAL RESULTS
SOIL

Well/Boring: Sample ID: Depth:	2 4 2	2-62A A1561 2 - 3		20 4 9	2-62A A1562 6 - 7		1,45	2-62A A1563 10 - 11		1045	2-62A A1564 15 - 16		22 A 2	2-62A A1565 22 - 23	
Parameters	Resul t	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
	11000	z	mg/kg	15000	z	mg/kg	10000	2	mg/kg	1700	z	mg/kg	750	z	mg/kg
Arsenic - Graphite Furnace	1.0	:	mg/kg	3.4		mg/kg	5.4		mg/kg	1.2		mg/kg	~1.1	>	mg/kg
Barium	650	z	mg/kg	32	z	mg/kg	< 25	3	mg/kg	4 21	3	mg/kg	09	z	mg/kg
per ye rum	4.0		mg/kg	1.5		mg/kg	1.2		mg/kg	<0.53	>	mg/kg	<0.54	>	mg/kg
Cadmicm	0.69		mg/kg	<0.48	>	mg/kg	<0.55	_	mg/kg	0.57		mg/kg	<0.54	_	mg/kg
	2 9	:	mg/kg	4.	:	mg/kg	14		mg/kg	9.7		mg/kg	3.0		mg/kg
	, o	>	mg/kg	.0.50 33	>	mg/kg	<0.50	>	mg/kg	<0.50	¬	mg/kg	<0.50	>	mg/kg
	0,7	•	mg/kg	77	:	mg/kg	21		mg/kg	1.7		mg/kg	1.1		mg/kg
11011	000	z:	mg/kg	0001	Z	mg/kg	14000	2	mg/kg	7300	z	mg/kg	2400	z	mg/kg
Lead - uraphite rurnace	0.0	z :	mg/kg	5.0	z :	mg/kg	7.1	Z	mg/kg	3.2	z	mg/kg	1.5	z	mg/kg
M: CC Y	40.022	>	mg/kg	<0.022 25	>	mg/kg	<0.024	>	mg/kg	<0.023	-	mg/kg	<0.023	>	mg/kg
אוכאפו	· .		mg/kg	; ئ		mg/kg			mg/kg	7.3		mg/kg	<4.3	>	mg/kg
31LVer 3:50	0.41		mg/kg	40.95 50.95	>	mg/kg	<u>.</u>	>	mg/kg	1. 1	>	mg/kg	۲.۲	>	mg/kg
4.3 / T=:-h:-h:	77		mg/kg	67		mg/kg	22		mg/kg	7.1		mg/kg	3.1		mg/kg
1, Z, 4-Irichlorobenzene	<0.550	- :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	⊃	mg/kg	<0.330	>	mg/kg
1, Z-Dichlorobenzene	<0.330 330	- :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg	<0.330	>	mg/kg
1,3-Uichlorobenzene	<0.330 6.330	- :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
7,4-Ulchlorobenzene	, 50.35U	> :	mg/kg	<0.550	> :	mg/kg	<0.330	>	mg/kg	<0.330	⊃	mg/kg	<0.330	-	mg/kg
2,4,3-Irichlorophenol	\$0.825 6.725	> :	mg/kg	<0.825	> :	mg/kg	<0.825	>	mg/kg	<0.825	_	mg/kg	<0.825	-	mg/kg
2,4,0-Irichlorophenol	<0.330 220 220	> :	mg/kg	<0.550	> :	mg/kg	<0.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg
2 /- Dientel Ophenot	70.330	> :	mg/kg	40.330	> :	mg/kg	<0.350	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2 /- Dinitrophonol	0.330	> =	mg/kg	<0.33U	> :	mg/kg	<0.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg
2 / - Dinitiople10	0.00	> :	mg/kg	620.0	> :	mg/kg	40.825 11.0	>	mg/kg	<0.825	_	mg/kg	<0.825	>	mg/kg
2,4-Dinitrotoluene	<0.330 6.330	> :	mg/kg	<0.550	> :	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg
2,6-Dinitrotoluene	<0.330	-	mg/kg	<0.330	_	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2-chloronaphthalene	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2-Lulorophenol	<0.350 0.550	> :	mg/kg	<0.330	_	mg/kg	<0.330	>	mg/kg	<0.330	⊃	mg/kg	<0.330	>	mg/kg
2-Metnylnaphthalene	<0.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
2 With the contract of the con	<0.350	- :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg
2 Nitroanline	<0.825 0.325	> :	mg/kg	<0.825	- :	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	_	mg/kg
Z-Nitrophenol	<0.550	-	mg/kg	<0.330	>	mg/kg	<0.330	⊃	mg/kg	<0.330	>	mg/kg	<0.330	ם	mg/kg

Well/Boring: Sample 1D: Depth:	2-62A A1561 2 - 3	2A 3		6 4 2	2-62A A1562 6 - 7		. 2 A D	2-62A A1563 10 - 11		2 A 51	2-62A A1564 15 - 16		2- A1 22	2-62A A1565 22 - 23	
Parameters	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	Q.F.R	Units	Result	QFR.	Units
3,3'-Dichlorobenzidine 3,Nitroaniline 4,6-Dinitro-2-methylphenol 4-Bromophenyl-phenylether 4-Chloroo-3-methylphenol 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenylether 4-Nitroaniline 4-Nitrophenol Acenaphthylene Acenaphthylene Acenaphthylene Benzo(a)anthracene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(c)fluoranthene Benzo(s)hluoranthene Di-n-butylphthalate Dienzofuran Diethylphthalate Fluoranthene Fluoranthene	00000000000000000000000000000000000000	22222222222222222222222222222		6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		99/kg 90/kg 90	00000000000000000000000000000000000000		98/48 98	0,000,000,000,000,000,000,000,000,000,		9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
)	•	ה (A)		•	RV /A	2	כ	82 /A	200	>	84 /SIII	00000	>	mg/ kg

Well/Boring: Sample ID: Depth:		2-62A A1561 2 - 3		0 A 2	2-62A A1562 6 - 7		2 A OT	2-62A A1563 10 - 11		1,045	2-62A A1564 15 - 16		28.2	2-62A A1565 22 - 23	
Parameters	Result	A.	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
Hexachlorobutadiene	<0.330	- :	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	_	mg/kg	<0.330	ר	mg/kg
nexaction ocyclopentagiene	<0.330 220 220	⊃:	mg/kg	•	- :	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg	<0.330	>	mg/kg
Indeno(1,2,3-cd)nyrene	20.330	> =	щg/кg	<0.350 <0.220	> =	mg/kg	<0.330	> :	mg/kg	<0.330	- :	mg/kg	<0.330	¬	mg/kg
Isophorone	<0.330	=	100/kg		> =	mg/kg	0520	> =	mg/kg	<0.330	> :	mg/kg	<0.330	ɔ :	mg/kg
N-Nitroso-di-n-propylamine	<0.330	=	mg/kg		> =	24/2E	0220	> =	mg/kg	40.330 40.330	- :	mg/kg	<0.330	> :	mg/kg
N-Nitrosodiphenylamine	<0.330	· >	mg/kg		· =	mg/kg	<0.330	> =	מא/פש מא/פש	05.05	> =	mg/kg	0.550	> :	mg/kg
Naphthalene	<0.330	>	mg/kg		_	mg/kg	<0.330	· >	ma/ka	<0.330	=	ma/ka	0.55	> =	24/50 54/50
Nitrobenzene	<0.330	>	mg/kg		_	mg/kg	<0.330	>	mg/kg	<0.330))	ma/ka	<0.330	=	mg/kg
Pentachlorophenol	<0.825	> :	mg/kg	<0.825	-	mg/kg	<0.825	-	mg/kg	<0.825	_	mg/kg	<0.825))	mg/kg
Phenanthrene	<0.330	> :	mg/kg	•	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
Priend	<0.350 0.720	> :	mg/kg	•	- :	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg	<0.330	>	mg/kg
hic/2-chicacethous	<0.330 0.330	> :	mg/kg		- :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
bis/2-chiologomoxy/methane	40.330 40.330	> :	mg/kg	•	- :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
bis(2-chloroisopropyl)ethe	0520	> :	mg/ kg		- :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
bis(2-Ethylbeyy) obtablists	0.330	> :	mg/kg	•	> :	mg/kg	<0.330 	-	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
1.1.1-Trichloroethane	× 1.330	-	mg/kg		>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
1.1.2.2-Tetrachloroethane		· =	19/kg	۰.۲. ۲.	=	09/kg	٠. بر د د د	=	ug/kg	5.5	:	ug/kg	5.4	:	ug/kg
1.1.2-Trichloroethane	, ιζ	> =	24/51 24/51) (> =	9/kg	۶ ۱	> :	ug/kg	Ç,	ɔ :	ug/kg	۰ ≎	-	ug/kg
1.1-Dichloroethane	'nζ	> =	64/50 64/50) '	> =	09/kg	Ç 4	> :	ug/kg	ۍ <i>ب</i>	⊃:	ug/kg	ιŷ	> :	ug/kg
1.1-Dichloroethene	. برگ	=	24/27) ત	> =	9 / SD	۶ ۲	> :	ug/kg	Ç 4	> :	ug/kg	Φ'	>	ug/kg
1.2-Dichloroethane) . Ç	> =	94/80 84/80	۲ ۲	> =	09/kg	۵ ہ	ɔ :	ug/kg	≎,	> :	ug/kg	ť,	>	ug/kg
1.2-Dichloropropane	'nζ	=	24/51) (> =	9/50 64/50	۶ ۲	> :	ug/kg	٠ ن	⊃:	ug/kg	ۍ .	-	ug/kg
2-Rutanone	5,5	> =	0 1 1 N 1 N 1 N 1 N 1 N 1 N 1 N 1 N 1 N	5	> :	ug/kg	Ç 5	> :	ug/kg	٥.	>	ug/kg	ۍ	>	ug/kg
2-Chloroethylvinyl ether	35	> =	09/kg	200	> :	ug/kg	2100 2100	- :	ug/kg	<100 <100	>	ug/kg	~1 00	>	ug/kg
2-Hexanone		> :	ug/kg	0 4	> :	ng/kg	01 .	>	ug/kg	~10	>	ug/kg	1 0	>	ug/kg
6-Methyl -2-Dentanone	00.5	> :	ug/kg	UC Ý	ɔ :	ug/kg	\$50 100	> :	ug/kg	~ 20	>	ug/kg	< 50	>	ug/kg
Apptons & relicatione	00.4	> :	ug/kg	00,	>	ug/kg	\$	>	ug/kg	< 50	>	ug/kg	^ 50	>	ug/kg
Acetone	0015	- :	ug/kg	6.8	- > :	ug/kg	×100	>	ug/kg	6.8	7	ug/kg	5.8	_	ug/kg
Bromoform	Ç ŕ	> :	ug/kg	۰ ۍ	- :	ug/kg	Ĉ,	-	ug/kg	٠	>	ug/kg	ئ	>	ug/kg
	0	>	ug/kg	₽	>	ug/kg	£	>	ug/kg	\$	>	ug/kg	\$	-	ug/kg

	Well/Boring: Sample ID: Depth:	N & W	2-62A A1561 2 - 3		0 × 0	2-62A 41562 5 - 7		7 A C	2-62A A1563 10 - 11		2 A 2	2-62A A1564 I5 - 16		22 22	2-62A A1565 22 - 23	
Parameters		Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
Bromomethane Carbon Disulfide Carbon Disulfide Chlorobenzene Chlorodibromomethane Chloromethane Chloromethane Chloromethane Dichloromethane Ethylbenzene Methylene Chloride Styrene Toluene Tichloroethene Vinyl Acetate Vinyl Chloride Xylenes (total) Cis. 1,3 Dichloropene	ව ව			19/46 19/46 19/46 19/46 19/46 19/46 19/46 19/46 19/46 19/46 19/46 19/46 19/46 19/46 19/46			19/kg 19/kg 19/kg 19/kg 19/kg 19/kg 19/kg 19/kg 19/kg 19/kg 19/kg 19/kg 19/kg 19/kg 19/kg 19/kg	\$%%%\$\$\$\$\$\$\$\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\\\2007\2007\\2007\\2007\\2007\\2007\\2007\\2007\\2007\\2007\\2007\\2007\\2007\\2007\		197/kg 197/kg 197/kg 197/kg 197/kg 197/kg 197/kg 197/kg 197/kg 197/kg 197/kg 197/kg 197/kg 197/kg 197/kg	\$	300000000000000000000000000000000000000	64/66 64/66 64/66 64/66 64/66 64/66 64/66 64/66 64/66 64/66 64/66 64/66 64/66 64/66 64/66	\$\$\$\$\$\$\$\$\$\$\$		10/ kg 10
	ene ene	› ሱ ሱ	, , ,	ug/kg ug/kg	ስ የ	, , ,	ug/kg ug/kg ug/kg	ን ሲ ሲ	, , ,	ug/kg ug/kg	ነ የ	, , ,	ug/kg ug/kg ug/kg	ን ሶ ሲ	, , ,	ug/kg ug/kg

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for
that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Well/Boring: Sample 10: Depth:	<u> </u>	2-63A A1555 2 - 3	4 : 4	· ·	2-63A A1556 7 - 8			2-63A A1557 10 - 11			2-63A A1558 I5 - 16			2-634 A1559 18 - 19	
	Result	OFR	Units	Result	QFR	Units	Result	QFR	Units	Result	aFR	Units	Resul t	aFR	Units
	11000	z	mg/kg	11000	z	mg/kg	12000	z	mg/kg	006	z	mg/kg	1500	z	mg/kg
	3.0	z		<1.2	3	mg/kg	<1.2	3	mg/kg	<0.95	3	mg/kg	<0.85	3	mg/kg
	00,	z		22	z	mg/kg	110	z	mg/kg	20	Z	mg/kg	<23	3	mg/kg
	<u>.</u> ;			5		mg/kg	6.		mg/kg	<0.49	>	mg/kg	<0.57	>	mg/kg
	13.71		mg/kg mg/kg	<0.48	-	mg/kg	0.7		mg/kg	<0.49 3.0	>	mg/kg mg/kg	0.90		mg/kg
	<0.50	_		<0.50	_	mg/kg	<0.50	_	ma/ka	<0.50	_	mg/kg	<0.50	_	mg/kg
	6.6			15		mg/kg	18		mg/kg	<2.4) >	mg/kg	<2.8	· >	mg/kg
	15000	z		10000	z	mg/kg	17000	z	mg/kg	2800	z	mg/kg	3700	z	mg/kg
	13	2		7.3	z	mg/kg	7.0	z	mg/kg	0.88	z	mg/kg	1.2	z	mg/kg
	<0.023	>		<0.025	>	mg/kg	<0.024	_	mg/kg	<0.023	>	mg/kg	<0.021	-	mg/kg
	19			8		mg/kg	50		mg/kg	<3.9	>	mg/kg	<4.5	>	mg/kg
	<0.93	>		%°0°	-	mg/kg	<1.2	_	mg/kg	<0.97	>	mg/kg	~1.1	>	mg/kg
	18			54		mg/kg	27		mg/kg	4.7		mg/kg	4.8		mg/kg
	<0.330	-		<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>		<0.330	_	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	- :		<0.330	_	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	> :		<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.825 0.1825	> :		<0.825	- :	mg/kg	<0.825	-	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
	<0.330 6.330	> :		<0.330 5.330	- :	mg/kg	<0.550	- :	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg
	<0.350)		<0.550 	>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.550	> :		<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.825	>		<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
	<0.330	>		<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>		<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
	<0.330	>		<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
	<0.330	>		<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.330	>		<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
	<0.330	> :		<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
	<0.825	>		<0.825	>	mg/kg	<0.825	-	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kç

Well/Boring: Sample ID: Depth:		2-63A A1555 2 - 3		2 7	2-63A A1556 7 - 8		2 A C	2-63A A1557 10 - 11		2 A Z	2-63A A1558 15 - 16		2 A 18	2-63A A1559 18 - 19	
Parameters	Result	QFR	Units	Resul t	QFR	Units	Resul t	QFR	Units	Result	QFR	Units	Result	QFR	Units
3,3'-Dichlorobenzidine 3-Nitroaniline 4,6-Dinitro-2-methylphenol 4-Bromophenyl-phenylether 4-Chloro-3-methylphenol 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenylether	60.330 60.825 60.330 60.330 60.330 60.330		mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	60.330 60.330 60.330 60.330 60.330		mg/kg mg/kg mg/kg mg/kg mg/kg	60.330 60.330 60.330 60.330 60.330		mg/kg mg/kg mg/kg mg/kg mg/kg	60.330 60.330 60.330 60.330 60.330	222222	99/kg 99/kg 99/kg 99/kg 99/kg	60.330 60.330 60.330 60.330 60.330		39/kg 39/kg 39/kg 39/kg 39/kg
4-Nitroaniline 4-Nitrophenol Acenaphthene Acenaphthylene Anthracene	60.825 60.825 60.330 60.330	JJJJ:	mg/kg mg/kg mg/kg mg/kg			mg/kg mg/kg mg/kg	<pre><0.825 <0.825 <0.330 <0.330 <0.330 </pre>	5555 5	mg/kg mg/kg mg/kg mg/kg	<pre><0.825 <0.825 <0.330 <0.330 <0.330 </pre>		mg/kg mg/kg mg/kg mg/kg	<pre><0.825 <0.825 <0.330 <0.330 <0.330 </pre>		mg/kg mg/kg mg/kg mg/kg
Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzoic Acid	0.330 0.330 0.330 0.330 0.330 0.330		39/kg 39/kg 39/kg 39/kg			39/kg 39/kg 39/kg 39/kg	60.330 60.330 60.330 60.330 60.330		39/kg 39/kg 39/kg 39/kg	60.330 60.330 60.330 60.330 60.330		39/kg 39/kg 39/kg 39/kg	<pre><pre><pre><pre><pre><pre><pre><pre></pre></pre></pre></pre></pre></pre></pre></pre>		39/kg 39/kg 39/kg 39/kg
Berly's alconor Butylbenzylphthalate Chrysene Di-n-butylphthalate Dibenzo(a,h)anthracene Dibenzofuan Diethylphthalate Fluoranthene	6.330 6.330 6.330 6.330 6.330 6.330	ככככככ ככי	99/kg 99/kg 99/kg 99/kg 99/kg	0.34 0.34 0.35 0.33 0.33 0.33 0.33 0.33 0.33 0.33	ככככככ ככי	99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg	60.330 60.330 60.330 60.330 60.330 60.330 60.330 60.330	כככרכככ כככ	99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg	6.53 6.33	, , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	39/kg 39/kg 39/kg 39/kg 39/kg 39/kg	0.57 0.57 0.65 0.65 0.03 0.04 0.04 0.03 0.03	כככיכככ כ כ	96/kg 199/kg 199/kg 199/kg 199/kg 199/kg 199/kg 199/kg
Hexachlorobenzene	<0.330	>	mg/kg		-	mg/kg	<0.330	>	mg/kg	<0.350	>	mg/kg	<0.330	>	mg/kg

Well/Boring: Sample ID: Depth:	NAN	2-63A A1555 2 - 3		NAN	2-63A A1556 7 - 8		240	2-63A A1557 10 - 11		2 A ST	2-63A A1558 15 - 16		2 A 8L	2-63A A1559 18 - 19	
Parameters	Result	OFR	Units	Result	OFR	Units	Result	OF R	Units	Result	OFR	Units	Result	QFR	Units
Hexachlorobutadiene	<0.330	>	mq/ka	<0.330	ב	ma/ka	<0.330	3	ma/ka	<0.330	=	ma/ka	0.330	=	ma/ka
Hexachlorocyclopentadiene	<0.330))	mg/kg	<0.330))	mg/kg	<0.330) –	mg/kg	<0.330	> >	mg/kg	6.330))	mg/kg
Hexachloroethane	<0.330)	mg/kg	<0.330	-	mg/kg	<0.330	_	mg/kg	<0.330	>	mg/kg	<0.330	n	mg/kg
Indeno(1,2,5-cd)pyrene	<0.330	> :	mg/kg	<0.330	- :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	⊃	mg/kg
Isophorone	<0.330	> :	mg/kg	<0.330 0.330	- :	mg/kg	<0.330	- :	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg
N-Nitrosodisbosylamine	0.550	> =	mg/kg	<0.330	> =	mg/kg	<0.350	- :	mg/kg	<0.330	> :	mg/kg	<0.330	⊃:	mg/kg
Nampthal and	0.530	> =	119/Kg	0520	> =	mg/kg	<0.330 <0.230 <0.230	> =	mg/kg	<0.330 0.330	> :	mg/kg	<0.330	> :	mg/kg
Nitrobenzene	055.0>	> =	24/2E	055.0>	> =	19/ Ag	220	> =	mg/kg	0.220	> =	mg/kg	40.330 40.330	> :	mg/kg
Pentachlorophenol	<0.825	> =		\$25.00 \$25.00	> =	24/50	,	> =	113/kg	20.00	> =	mg/kg	VO.330	> =	mg/kg
Phenanthrene	<0.330))	mg/kg	<0.330))	mg/kg	<0.330	> =	ma/ka	<0.330	> =	mg/kg	<0.330	-	mg/kg ma/ka
Phenol	<0.330	>	mg/kg	<0.330	_	mg/kg	<0.330	· –	mg/kg	<0.330) >	mg/kg	<0.330) >	mg/kg
Pyrene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
bis(2-Chloroethoxy)methane	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg
bis(2-Chloroethyl)ether	<0.330	> :	mg/kg	<0.330	- :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	⊃	mg/kg
DIS(Z-UNIOPOISOPPOPYL)ethe	<0.330	> :	mg/kg	<0.330 0.330	- :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
DIS(Z-Etnythexyt)phthalate	<0.330 7 0	-	mg/kg	<0.350	-	mg/kg	<0.330	> :	mg/kg	1.7	:	mg/kg	1.7	:	mg/kg
1, 1, 1-Trichtoroethane	o.ç ^}	¬ =	ug/kg	4.5 د۲.	¬ =	ug/kg	ôή	> =	ug/kg	ۍ	> =	ug/kg	ۍ ۱	> =	ug/kg
1 1 2-Trichloroethane	ńζ	=	24/5	'nί) <u>-</u>	04/65) (> =	64/65 64/65	۲,	o :	54/60 14/10:	? ५	> =	09/ Kg
1,1-Dichloroethane	λŵ))	ug/kg ug/kg) (0)	ug/kg ug/ka	5 . ≎	>	ug/kg ug/ka	ъ. Ф	> =	ug/kg	ۍ د ې	> =	ug/kg
1,1-Dichloroethene	\$	>	ug/kg	< 5	_	ug/kg	ŵ	· ¬	ug/kg	, Ĉ) >	ug/kg	ن ئ) =	ua/ka
1,2-Dichloroethane	\$	>	ug/kg	ĉ.	_	ug/kg	₽	_	ug/kg	ئ	>	ug/kg	Ĉ.	_	ug/kg
1,2-Dichloropropane	د	>	ug/kg	\$	>	ug/kg	ۍ	_	ug/kg	ئ	>	ug/kg	< 5	⊃	ug/kg
2-Butanone	3.2	-	ug/kg	3.1	-	ug/kg	~1 00	_	ug/kg	~1 00	>	ug/kg	15	8	ug/kg
2-Chloroethylvinyl ether	~ 1 0	>	ug/kg	~ 10	⊃	ug/kg	~10	_	ug/kg	~10	>	ug/kg	1 0	>	ug/kg
2-Nexanone	\$ 20	-	ug/kg	<50 -	-	ug/kg	2 0	>	ug/kg	< 50	>	ug/kg	<50	>	ug/kg
4-Methyl-Z-Pentanone		-	ug/kg	\$	>	ug/kg	~ 20	-	ug/kg	^ 20	>	ug/kg	< 50	>	ug/kg
Acetone	6.5	号 :	ug/kg	9.1	号 :	ug/kg	5.	¬ :	ug/kg	12	9	ug/kg	29	7	ug/kg
Bromoform	ôή	> =	ug/kg	≎) 	ug/kg	٠ پ	> :	ug/kg	'nή	> :	ug/kg	ιΩή	ɔ :	ug/kg
	,	>	84 /8n	,	>	497 Kg	7	>	ug/ kg	9	>	ug/kg	0	>	ug/kg

	Well/Boring: Sample ID: Depth:	NAN	2-63A A1555 2 - 3		1¥ù	2-63A 11556 7 - 8		240	2-63A A1557 10 - 11		2- 15 A1	2-63A A1558 I5 - 16		-2- 181	2-63A A1559 18 - 19	
Parameters		Result	QFR.	Units	Result	QFR	Units	Result	QFR	Units	Result	Q FR	Units	Result	OFR	Units
Bromomethane Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloromethane Chloromethane Ethylbenzene Ethylbenzene Ethylbenzene Ethylbenzene Tetrachloroethene Toluene Trichloroethene Vinyl Acetate Vinyl Chloride Xylenes (total) cis 1,3 Dichloroethene trans 1,3-Dichloroethene	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	\$&&&\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$		64/86 64/86 64/86 64/86 64/86 64/86 64/86 64/86 64/86 64/86 64/86 64/86 64/86 64/86 64/86 64/86 64/86 64/86 64/86	\$&&&&\$&\$&\$		69/kg 69/kg 69/kg 69/kg 69/kg 69/kg 69/kg 69/kg 69/kg 69/kg 69/kg 69/kg 69/kg 69/kg 69/kg 69/kg	\$%%%\$\$\$%%\$\$%%\$\$%		19/Kg 19/Kg	\$~~~\$		6 6 4 / 6 n n n n n n n n n n n n n n n n n n	\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$		6 6 7 6 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8
trans-1,2-Dichloroethene	ene	\$	-	ug/kg	٨	-	ug/kg	_Ĉ	-	ug/kg	ئ	5	ug/kg	\$	כ	ug/kg

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for
 that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.</pre>

Well/Boring: Sample ID: Depth:	N A N	2-64A A1548 2 - 3		7 A 2	2-64A A1549 7 - 8		2 A 7	2-64A 41550 7 - 8		2 A 12	2-64A A1551 12 - 13		2- A1	2-64A A1552 17 - 18	
Parameters	Result	QFR	Units	Result	QFR	Units	Resul t	QFR	Units	Result	QFR R	Units	Result	QFR	Units
A i un i ro i un i	12000	=	-1/1-1	00071	=		0000	=	,	0000	:		000,	:	
Arsenic - Graphite Furnace	000	Z	mg/kg	0000	z	mg/kg	12000	z	mg/kg	9900	z	mg/kg	1800 73	z :	mg/kg
	, co	2	0 4 / CE		2	104/AU		3	119/Kg	- ;	3	mg/kg	7.1.2	> :	119/ Kg
Beryllium	7.4	2	mg/kg	1.9	5	119/kg	1.6 1.6	5	19/kg	1.5	5	mg/kg mg/ka	50.45	z =	mg/kg mg/ka
Cadmium	1:1		mg/kg	0.55		mg/kg	<0.54	>	mg/kg	<0.52	-	mg/kg	<0.45))	mg/kg
Chromium	15		mg/kg	19		mg/kg	14		mg/kg	-		mg/kg	8.5		mg/kg
Chromium VI	<0.50	⊃	mg/kg	<0.50	>	mg/kg	<0.50	>	mg/kg	<0.50	>	mg/kg	<0.50	-	mg/kg
Copper	8.5	:	mg/kg	22		mg/kg	20		mg/kg	19		mg/kg	<2.3	>	mg/kg
I FON	15000	Z:	mg/kg	13000	Z:	mg/kg	086	Z	mg/kg	11000	z	mg/kg	3700	z	mg/kg
Lead - Graphite Furnace	2.7	z :	mg/kg	2.5	z :	mg/kg	3.0	Z :	mg/kg	7.8	Z	mg/kg	1.5	Z	mg/kg
Mercury	<0.030 73.030	>	mg/kg	<0.051	>	mg/kg	<0.032	>	mg/kg	<0.030	>	mg/kg	<0.032	>	mg/kg
Nickel	-	:	mg/kg	87	:	mg/kg			mg/kg	21		mg/kg	6.3		mg/kg
Silver	<0.93	-	mg/kg	 !	>	mg/kg	<u>.</u> .	>	mg/kg	~1. 0	>	mg/kg	<0.91	_	mg/kg
71nc	57	:	mg/kg	53		mg/kg	5 8		mg/kg	22		mg/kg	7.8		mg/kg
1,2,4-Trichlorobenzene	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
1,2-Dichlorobenzene	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
1,5-Dichlorobenzene	<0.330	-	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
1,4-Dichlorobenzene	<0.350	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2,4,5-Irichlorophenol	<0.825	> :	mg/kg	<0.825	> :	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
2,4,6-Irichlorophenol	<0.350	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>:	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
2,4-Dichlorophenol	<0.330 6 230	> :	mg/kg	<0.330	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
Z,4-Ulmethylphenol	<0.350 6.937	- :	mg/kg	<0.330	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2,4-Dinitrophenol	CZ0.0>	> :	mg/kg	\$0.825 6.15	> :	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
z,4-binitrotoluene	<0.350 0.550	- :	mg/kg	<0.550	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2,6-Dinitrotoluene	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Z-Chloronaphthalene	<0.330	-	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2-Chlorophenol	<0.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
Z-Methylnaphthalene	<0.350	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2-Methylphenol	<0.330	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg
2-Nitroaniline	<0.825	⊃:	mg/kg	<0.825	- :	mg/kg	<0.825	>	mg/kg	<0.825	-	mg/kg	<0.825	_	mg/kg
Z-Nitrophenol	<0.330	>	mg/kg	<0.530	-	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg	<0.330	_	mg/kg

Well/Boring: Sample ID: Depth:	-2 14 2	2-64A A1548 2 - 3		4 K P.	2-64A A1549 7 - 8		2 A 7	2-64A A1550 7 - 8		2 4 5	2-64A A1551 I2 - 13		2 A 7	2-64A A1552 17 - 18	
Parameters	Result	QFR	Units	Resul t	QFR	Units	Result	QFR	Units	Resul t	QFR	Units	Result	QFR	Units
3,3'-Dichlorobenzidine 3,4'-Dinitroaniline 4,6-Dinitro-2-methylphenol 4-Bromophenyl-phenylether 4-Chloroaniline 4-Chloroaniline 4-Chloroaniline 4-Methylphenol 4-Wethylphenol 4-Witrophenol Acenaphthene Acenaphthene Benzo(a)anthracene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(s)phrhalate Chrysene Di-n-butylphthalate Chrysene Di-n-butylphthalate Di-n-butylphthalate Di-n-octylphthalate Dienzo(a,h)anthracene	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0	22222222222222 2 22222	39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6 6		99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg	60.330 60.330	222222222222222222222222222222222222222	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	60.330 60.300 60		39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg 39/kg	60.330 60.330 60.330 60.330 60.330 60.330 60.330 60.330 60.330 60.330 60.330 60.330 60.330 60.330 60.330 60.330		
r voor antiterie Fluorene Hexachlorobenzene	<0.330 <0.330 <0.330	,,,	mg/kg mg/kg	<0.330 <0.330 <0.330	,,,	mg/kg mg/kg mg/kg	<0.330 <0.330 <0.330		mg/kg mg/kg	<0.330 <0.330 <0.330	222	39/kg 39/kg	<0.330 <0.330 <0.330	222	mg/kg mg/kg

B = Analyte was also found in sample blank
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 QFR = Qualifier
 Analytical data has not been validated.

Well/Boring: Sample ID: Depth:	242	2-64A A1548 2 - 3		2 A V	2-64A A1549 7 - 8		247	2-64A A1550 7 - 8		1975	2-64A A1551 12 - 13		. S. A. 7.	2-64A A1552 17 - 18	
Parameters	Resul t	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	Q R	Units
Hexachlorobutadiene	<0.330)	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
Hexachlorocyclopentadiene	<0.350	> :	mg/kg		-	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
Hexachloroethane	<0.350	> :	mg/kg	<0.330	- :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Indeno(1,2,3-ca)pyrene	<0.330 5.130	> :	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
1 soprorone	<0.350 0.250	> :	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
N-Nitroso-di-n-propylamine	<0.350	> :	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
N-Nitrosodiphenylamine	<0.330	- :	mg/kg		>	mg/kg	<0.330	⊃	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
Naphthalene	<0.350 0.750	> :	mg/kg		-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
NITropenzene	<0.330	> :	mg/kg		-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Pentachlorophenol	40.825 625 675	ɔ :	mg/kg	<0.825	> :	mg/kg	<0.825	-	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
Prenantirene	<0.330 6.330	- :	mg/kg		> :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
Friend	<0.330	> :	mg/kg		-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Pyrene Lista of Landau	<0.550	> :	mg/kg		-	mg/kg	<0.330	>	mg/kg	<0.330	⊃	mg/kg	<0.330	>	mg/kg
Dis(z-thloroethoxy)methane	<0.350	- :	mg/kg		-	mg/kg	<0.330	-	mg/kg	<0.330	⊃	mg/kg	<0.330	-	mg/kg
bis(2-unloroetnyl)etner	<0.550	> :	mg/kg		> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	-	mg/kg
Dis(z-untoroisopropyt)etne	<0.330	>	mg/kg		>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
1 1 1 Trickless()	ن.	:	mg/kg	ر. د	:	mg/kg	1. ₉		mg/kg	2.1		mg/kg	<0.330	>	mg/kg
1, 1, 1-1Fichtordethane	Û,	> :	ug/kg	، ئ	- :	ug/kg	ψ, i	>	ug/kg	₩.	>	ug/kg	\$	>	ug/kg
1,1,2,Z-letrachloroethane	Ûή	> :	ug/kg	۰ ۍ	- :	ug/kg	. ≎	>	ug/kg	ις,	>	ug/kg	\$	⊃	ug/kg
1,1,2-IFICHTOFORTHAME	Ο κ	> =	ug/kg	ۍ بر	> =	ug/kg	ڻ ب ڻ	> :	ug/kg	Ωí	- :	ug/kg	ι ,	- :	ug/kg
1 1 2 cm of containe) () :	9/ kg	ب ر	ɔ :	ug/kg	۱ ئ)	ng/kg	۰ ۲	>	ug/kg	Ç.	>	ug/kg
1 2-Dichlorocthene	6 ہ	> :	ug/kg	ۍ بر	> :	ug/kg	٠ د	⇒:	ug/kg	φ,	> :	ug/kg		-	ug/kg
1, 2-Dichior Dechane	٠ ا	ɔ :	ug/kg	۰ ۍ	-	ug/kg	Φ'	>	ug/kg	÷.	>	ug/kg	_ئ	-	ug/kg
1, z-ulchloropropane	۰,	-	ug/kg	Ŷ,	> :	ug/kg	₽,	>	ug/kg	₽	>	ug/kg	\$	>	ug/kg
Z-Butanone	۲.5 زز	- >:	ug/kg	<100	>	ug/kg	3.0	-	ug/kg	4.0	-	ug/kg	2.0	7	ug/kg
Z-Chloroethylvinyl ether	~10 -	>	ug/kg	~10	>	ug/kg	~ 10	>	ug/kg	~10	>	ug/kg	1 0	>	ug/kg
Z-Hexanone	0.ç.	> :	ug/kg	\$0 ;	>	ug/kg	~ 20	>	ug/kg	< 50	>	ug/kg	<50	>	ug/kg
4-Metnyl-Z-Pentanone	0¢>	>	ug/kg	<50	>	ug/kg	^ 20	>	ug/kg	~ 20	>	ug/kg	^ 50	>	ug/kg
Acetone	9.8	9	ug/kg	13	粤	ug/kg	13	8	ug/kg	7.2	8	ug/kg	11	粤	ug/kg
Benzene	۰ ۍ	> :	ug/kg	φ,	> :	ug/kg	.	>	ug/kg	ئ	>	ug/kg	ۍ ئ	>	ug/kg
Bromotorm	ç	>	ug/kg	≎	-	ug/kg	₽	>	ug/kg	ب	ɔ	ug/kg	ب ک	-	ug/kg

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for
 that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.</pre>

	Well/Boring: Sample ID: Depth:	NAN	2-64A A1548 2 - 3		NAV	2-64A A1549 7 - 8		786	2-64A A1550 7 - 8		2 A 21	2-64A A1551 12 - 13		9,4,7	2-64A A1552 17 - 18	
Parameters		Result	OFR	Units	Result	Q.F.R	Units	Resul t	QFR	Units	Result	o FR	Units	Result	QFR	Units
-		:														
Bromomethane		~10	>	ug/kg	~10	>	ug/kg	1 0	>	ua/ka	<10	_	ua/ka	~10	=	ua/ka
Carbon Disulfide		\$	>	ug/kg	ĉ.	>	ug/kg	\$	>	ug/kg	\$	· ¬	ug/ka			ua/ka
Carbon Tetrachloride		\$	-	ug/kg	ĉ	>	ug/kg	Ą	>	ug/kg	څ.	_	ug/kg	٠Ĉ		ua/ka
Chlorobenzene		\$	-	ug/kg	ĉ	>	ug/kg	ئ	>	ug/kg	ئ	_	ug/kg	ŵ	_	ua/ka
Chlorodibromomethane		ۍ ب	>	ug/kg	ĉ.	>	ug/kg	ۍ	>	ug/kg	ŵ	_	ug/kg	ŵ	>	ug/ka
Chloroethane		°,	- :	ug/kg	~ 10	-	ug/kg	~10	>	ug/kg	^10	_	ug/kg	^10	>	ug/kg
Chlorotorm		ۍ ب	>	ug/kg	ŵ.	-	ug/kg	څ	>	ug/kg	ئ	>	ug/kg	\$	_	ug/kg
Chloromethane		°10	> :	ug/kg	~10 _	>	ug/kg	~10	>	ug/kg	~10	>	ug/kg	<10	>	ug/kg
Ulchlorobromomethane		δ,	> :	ug/kg	.	>	ug/kg	٠	>	ug/kg	\$	>	ug/kg	\$	⊃	ug/kg
Ethyl benzene		Ç,	- :	ug/kg	٠	>	ug/kg	₽,	>	ug/kg	.	>	ug/kg	څ.	>	ug/kg
Methylene Unioride		10	> :	ug/kg	5.5	号 :	ug/kg	5.8	8	ug/kg	6.5	뽁	ug/kg	7.4	7	ug/kg
Styrene		۰, ۍ	> :	ug/kg	ئ	>	ug/kg	₽	-	ug/kg	ئ	>	ug/kg	ۍ	>	ug/kg
letrachloroethene		δ,	> :	ug/kg	₩,	>	ug/kg	₽	-	ug/kg	\$	_	ug/kg	ئ	>	ug/kg
Toluene		۰,	- :	ug/kg	. ≎	>	ug/kg	₩,	_	ug/kg	ئ	-	ug/kg	ۍ	>	ug/kg
Vind Acctate		Ç,	> :	ug/kg	Ç,	> :	ug/kg	φ,	-	ug/kg	ۍ	>	ug/kg	څ	>	ug/kg
אווואו ארבופוב		2;	> :	ug/kg	<u>0</u> :	>	ug/kg	01 >	-	ug/kg	~10	⊃	ug/kg	~10	>	ug/kg
Vinyl chloride		210	-	ug/kg	~10	>	ug/kg	~1 0	-	ug/kg	^10	_	ug/kg	~10	>	ug/kg
Ë,		Φ.	>	ug/kg	ۍ	>	ug/kg	څ	_	ug/kg	_ئ	>	ug/kg	څ.	>	ug/kg
_ ,	ne	.	>	ug/kg	?	>	ug/kg	\$	-	ug/kg	\$	_	ug/kg	څ	>	ug/kg
cis-1,2-Dichloroethene	a	₽	>	ug/kg	ئ	-	ug/kg	_ئ	⊃	Ug/kg	ź.	=	ua/ka	\$	=	110/kg
trans 1,3-Dichloropropene	bene	څ	_	ug/kg	ئ	>	ug/kg	ŵ	_	ua/ka	ث	- =	ua/ka	, r Ĉ	=	19/kg
trans-1,2-Dichloroethene	ene	\$	-	ug/kg	ئ	>	ug/kg	\$	_	ug/kg	\$	_	ug/kg	\$)	ug/kg
																,

Well/Boring: Sample ID: Depth:	2-5 2.5	2-65A A1540 5 - 3.5		0.40	2-65A A1541 6 - 7		2 A 12	2-65A A1542 I2 - 13		2 A 16	2-65A A1543 16 - 17		20 A1	2-65A A1544 20 - 21	
Parameters	Resul t	QFR	Units	Result	A.R	Units	Result	QFR	Units	Result	OFR	Units	Result	QFR	Units
	8400	z	mg/kg	2900	z	mg/kg	19000	z	mg/kg	6300	z	mg/kg	0006	z	mg/kg
Arsenic - Graphite Furnace	2.8		mg/kg	3.3		mg/kg	1.2		mg/kg	4.1		mg/kg	2.5		mg/kg
Barıum	150	Z	mg/kg	69	z	mg/kg	27	z	mg/kg	32	z	mg/kg	54	z	mg/kg
Beryllium	-		mg/kg	0.88		mg/kg	2.0		mg/kg	1.0		mg/kg	1.9		mg/kg
Cadmium	0.74		mg/kg	<0.46	>	mg/kg	<0.55	>	mg/kg	<0 . 46	>	mg/kg	-:		mg/kg
Chromium	4.6		mg/kg	8.2		mg/kg	54		mg/kg	11		mg/kg	37		mg/kg
Chromium VI	<0.49 7.5	>	mg/kg	<0.51 	>	mg/kg	<0.50	>	mg/kg	<0.50	>	mg/kg	<0.50	-	mg/kg
Copper	7.6	:	mg/kg	٠.٢ رووز	:	mg/kg	22		mg/kg	9.5		mg/kg	7		mg/kg
I FON	0000	Z:	mg/kg	7200	Z:	mg/kg	16000	Z	mg/kg	11000	z	mg/kg	22000	z	mg/kg
Lead - uraphite rurhace	8.8 200	z :	mg/kg	5.5	z :	mg/kg	3.5	z	mg/kg	9.1	2	mg/kg	5.7	z	mg/kg
Mercury	<0.02 43.025	>	mg/kg	<0.020	>	mg/kg	<0.023	>	mg/kg	<0.024	>	mg/kg	<0.024	>	mg/kg
NICKEL	7.	:	mg/kg	12		mg/kg	50		mg/kg	13		mg/kg	22		mg/kg
Silver	.8.6	>	mg/kg	<0.92 .i	>	mg/kg	7.	>	mg/kg	<0.93	>	mg/kg	<0.98	>	mg/kg
71UC	7.	:	mg/kg	15		mg/kg	35		mg/kg	17		mg/kg	28		mg/kg
1,2,4-Irichlorobenzene	<0.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
1, Z-Dichlorobenzene	<0.550	- :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
1,5-Dichlorobenzene	<0.550	> :	mg/kg	<0.330	> :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	_	mg/kg
1,4-Ulchlorobenzene	<0.330 0.330	> :	mg/kg	<0.350	- :	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2,4,3-Irichlorophenol	628.05	> :	mg/kg	<0.825 0.825	- :	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
2,4,0-1richlorophenol	<0.330 0.330	> :	mg/kg	<0.350	- :	mg/kg	<0.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg
	40.330	> :	mg/kg	0.00	ɔ :	mg/kg	<0.350 0.550	- :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2 /- Dimitrophone	<0.330 \0.935	> :	mg/kg	<0.350 6.935	- :	mg/kg	<0.330	> :	mg/kg	<0.330	-	mg/kg	<0.330	-	mg/kg
	20.00	> :	Ш9/кд ,	626.05	> :	mg/kg	<0.872 0.825	> :	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
2,4-Dinitrotoluene	<0.330 0.330	> :	mg/kg	<0.350	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2,0-Dinitrotoluene	<0.330 0.330	- :	mg/kg	<0.350	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Z-Chloronaphthalene	<0.330	- :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Z-Uniorophenoi	<0.330	> :	mg/kg	<0.330	- :	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2 Methylnaphthalene	40.330 330	- :	mg/kg	<0.350 0.550	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
Z-Metnylphenol	<0.330	- :	mg/kg	<0.330	⊃:	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg
2-Nitroaniline	<0.825 6.725	> :	mg/kg	<0.825	- :	mg/kg	<0.825	-	mg/kg	<0.825	>	mg/kg	<0.825	>	mg/kg
Z-Nitrophenol	60.33 0	-	mg/kg	<0.350	>	mg/kg	<0.330	-	mg/kg	<0.330	>	mg/kg	<0.330	>	mg/kg

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Well/Boring: Sample 1D: Depth:	2-65A A1540 2.5 - 3.	.65A 1540 - 3.5		-2- 8-1-	2-65A A1541 6 - 7		2 A 51	2-65A A1542 12 - 13		2 A 16	2-65A A1543 16 - 17		2 A 20	2-65A A1544 20 - 21	
Parameters	Result	OFR	Units	Result	OFR	Units	Result	OFR	Units	Result	QFR.	Units	Result	QFR	Units
3,3'-Dichlorobenzidine 5,Nitroaniline 4,6-Dinitro-2-methylphenol 4-Bromophenyl-phenylether 4-Chloroaniline 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenylether 4-Methylphenol 4-Nitroaniline 6-Nitrophenol Acenaphthone Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(k)fluoranthene Benzo(k)fluoranthene Benzo(k)hluoranthene	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			6 6 6 330 6 6 330 7 6 330 7 6 330 7 6 330 7 7 7 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8 8		99/K9 999/K9 99/K9 99/	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg	0.0330 0.		99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg 99/Kg	0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0		
Fluoranthene Fluorene Hexachlorobenzene	<0.330 <0.330 <0.330	222	mg/kg mg/kg mg/kg			mg/kg mg/kg mg/kg	<0.330 <0.330 <0.330	222	mg/kg mg/kg mg/kg	<0.330 <0.330 <0.330		mg/kg mg/kg mg/kg	<0.330 <0.330 <0.330	222	mg/kg mg/kg mg/kg

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Well/Boring: Sample ID: Depth:	2-6 2.5	2-65A A1540 2.5 - 3.5		0 A 9	2-65A A1541 6 - 7		2 45	2-65A A1542 12 - 13		2 4 2	2-65A A1543 16 - 17		2- A1 20	2-65A A1544 20 - 21	
Parameters	Result	QFR	Units	Result	a R	Units	Result	QFR	Units	Result	QFR.	Units	Result	OFR	Units
Hexachlorobutadiene Hexachlorocyclopentadiene Hexachlorocyclopentadiene Hexachlorocyclopentadiene Indeno(1,2,3.cd)pyrene Isophorone N.Nitroso-di-n-propylamine N.Nitrosodiphenylamine N.Nitrosodiphenylamine Nitrobenzene Pentachlorophenol Phenanthrene Phenol Phenol Pyrene Dis(2-Chlorocthoxy)methane Dis(2-Chlorocthyl)ethe Dis(2-Chlorocthoxy)methane Dis(2-Chlorocthoxy)methane Dis(2-Chlorocthoxy)methane Dis(2-Chlorocthoxy)methane Dis(2-Chlorocthoxy)methane Dis(2-Chlorocthoxy)methane Dis(2-Chlorocthoxy)methane 1,1-Dichlorocthone 1,2-Dichlorocthone 1,2-Dichlorocthone 2-Butanone 2-Chlorocthylvinyl ether 2-Hethyl-2-Pentanone 4-Methyl-2-Pentanone	\$6.000000000000000000000000000000000000	222222222222222222222222222222222222222	99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		99/kg 90/kg 90/kg 90/kg 90/kg 90	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬	18/ Kg 18/ Kg 18	\$25.60 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$30 \$3	בכרכככככככככככככככככככ	9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9
Acetone Benzene Bromoform	5.4 5 5	, , , ,	ug/kg ug/kg ug/kg	\$ \$ \$ \$ \$ \$ \$ \$, 2 0 0	ug/kg ug/kg ug/kg	3 5	2 D D	ug/kg ug/kg ug/kg ug/kg	55.7 55.7	, g o o	ug/kg ug/kg ug/kg ug/kg	§.5.5 5.5.5	- 2	ug/kg ug/kg ug/kg ug/kg

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	Well/Boring: Sample ID: Depth:	2- A1 2.5	2-65A A1540 5 - 3.5		0 A W	-65A 11541		2 A ST	2-65A A1542 12 - 13		19.4°5	2-65A A1543 16 - 17		2- A1	2-65A A1544 20 - 21	
Parameters		Result	QFR	Units	Result	QFR.	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
Bromomethane Carbon Disulfide		6 5 7	> >:	ug/kg ug/kg	6 & .	> >:	ug/kg ug/kg		> >:	ug/kg ug/kg	6	> >	ug/kg ug/kg	<10 <5		ug/kg ug/kg
Carbon letrachloride Chlorobenzene		δ. δ	> >	ug/kg ug/kg	\$ \psi	> >	ug/kg ug/kg	Ф.	> >	ug/kg ug/kg	φ.	> >	ug/kg ug/ka	ئ ئ	> >	ug/kg ug/ka
Chlorodibromomethane		٠ ٢	> =	ug/kg	ۍ <u>د</u>	> =	ug/kg	ئ ئ	> :	ug/kg	ۍ د د	> :	ug/kg	₩,	> :	ug/kg
Chloroform		5. €)	ug/kg ug/kg	<u> </u>	o	ug/kg ug/kg	<u>.</u> &	- -	ug/kg ug/kg	÷.	>	ug/kg ug/kg	<u>\$</u>)	ug/kg ug/kg
Chloromethane		\$ 4	> :	ug/kg	6 4	⊃:	ug/kg	٠ ئ	>:	ug/kg	₽,	> :	ug/kg	را ت	ɔ :	ug/kg
Ethylbenzene		5 æ)	ug/kg ug/kg	о. С	> >	ug/kg ug/kg	6.A	> >	ug/kg ug/kg	ο φ	- -	ug/kg ug/kg	\$ \ \$	- -	ug/kg ug/kg
Methylene Chloride Styrene		5.6 <5	9 5	ug/kg ug/ka	6.8 <5	۵ ع	ug/kg ug/ka	6.8 5	8 =	ug/kg	3.3 5.3	9 =	ug/kg	2.8 <5	뽁 =	ug/kg
Tetrachloroethene		ıδι	· ɔ :	ug/kg	ıδı)) :	ug/kg	. Φ.)	ug/kg	, Δ.) –	ug/kg	. ι δ.) –	ug/kg
loluene Trichloroethene		\$ \ \$	> >	ug/kg ug/kg	Ф. Ф.	> >	ug/kg ug/ka	φ Φ	> >	ug/kg ug/ka	φ.	> >	ug/kg ug/ka	ሱ ሱ	> =	ug/kg ug/ka
Vinyl Acetate		<10)	ug/kg	~10	>	ug/kg	~10	_	ug/kg	~10)	ug/kg	~10	· –	ug/kg
Vinyl Chloride		~10 	> :	ug/kg	, <u>1</u> 0	> :	ug/kg	~10	> :	ug/kg	10	> :	ug/kg	10	- :	ug/kg
<pre></pre>	e.	S (S	> =	ug/kg ug/ka	ô. Ω	> =	ug/kg	o	> =	ug/kg	ۍ _۲ ۵	>=	ug/kg	ۍ بر	> =	ug/kg
Ċ		. \$) >	ug/kg	, (,	· >	ug/kg	ιĈ) –	ug/kg	'nΦ) –	ug/kg ug/kg	ۍ د))	ug/kg
	oene	ιŞι	ɔ :	ug/kg	Ω)	ug/kg	'n	-	ug/kg	ťς	-	ug/kg	٠	_	ug/kg
trans-1,2-Dichloroethene	ene	≎	>	ug/kg	≎	>	ug/kg	≎	>	ug/kg	÷	>	ug/kg	÷	-	ug/kg

		I
	Units	99/kg 90/kg 90/kg 90/kg 90/kg 90
2-65A A1546 99 - 30	Q FR	z ^N
2- 29	Resul t	1500 2.3 2.3 2.3 4.55 6.7 6.7 6.7 6.7 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0
	Units	99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg
2-65A A1545 26 - 27	QFR	ZDZ DDZZD D DDDDDDDDDDDDDD
2 A 2	Result	2300 41.1 42.2 40.54 40.54 60.51 60.024 7.9 41.1 7.8 60.330 60.300
Well/Boring: Sample ID: Depth:	Parameters	Aluminum Arsenic - Graphite Furnace Barium Beryllium Cadmium Chromium Chromium VI Copper Iron Lead - Graphite Furnace Mercury Nickel 3:1ver Zinc 1,2.4-Trichlorobenzene 1,4.5-Trichlorobence 2,4.5-Trichlorophenol 2,4.5-Trichlorophenol 2,4.5-Initrophenol

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Analytical post the FTA for SO Tinker Air Force Base

		I	
	Units	99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg 99/kg	
2-65A A1546 29 - 30	QFR	2222222222222222222222	
29 A 2	Result	60.330 60.300 60	
	Units	99/kg 90/kg 90/kg 90	
2-65A A1545 26 - 27	QFR		
28 A. P.	Result	\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
Well/Boring: Sample ID: Depth:	Parameters	3,3'-Dichlorobenzidine 5.Mitroaniline 4,6-Dinitro-2-methylphenol 4.Bromophenyl-phenylether 4-Chloro-3-methylphenol 4.Chloropenyl-phenylether 4-Chloropenyl-phenylether 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenylether 4-Nitroaniline 4-Nitrophenol Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)anthracene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(x)fluoranthene Eluylbenzylphthalate Dienzofuran Diethylphthalate Dienzofuran Hexachlorobenzene	

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Analytical ...sults at the FTA for SO Tinker Air Force Base

Well/Boring: Sample ID: Depth:	28 A. Q.	2-65A A1545 26 - 27		29 A 2	2-65A A1546 29 - 30	
Parameters	Result	QFR	Units	Resul t	Q. R.	Units
Hexachlorobutadiene	<0.330	-	mg/kg	<0.330	>	mg/kg
Hexachlorocyclopentadiene	<0.330	>	mg/kg	<0.330	>	mg/kg
Hexachloroethane	<0.330	>	mg/kg	<0.330	>	mg/kg
Indeno(1,2,3-cd)pyrene	<0.330	>	mg/kg	<0.330	_	mg/kg
Isophorone	<0.330	>	mg/kg	<0.330	_	mg/kg
N-Nitroso-di-n-propylamine	<0.330	>	mg/kg	<0.330	_	mg/kg
N-Nitrosodiphenylamine	<0.330	>	mg/kg	<0.330	>	mg/kg
Naphthalene	<0.330	-	mg/kg	<0.330	>	mg/kg
Nitrobenzene	<0.330	>	mg/kg	<0.330	_	mg/kg
Pentachlorophenol	<0.825	>	mg/kg	<0.825	>	mg/kg
Phenanthrene	<0.330	>	mg/kg	<0.330	_	mg/kg
Phenol	<0.330	>	mg/kg	<0.330	>	mg/kg
Pyrene	<0.330	>	mg/kg	<0.330	-	mg/kg
bis(2-Chloroethoxy)methane	<0.330	>	mg/kg	<0.330	>	mg/kg
bis(2-Chloroethyl)ether	<0.330	>	mg/kg	<0.330	>	mg/kg
bis(2-Chloroisopropyl)ethe	<0.330	>	mg/kg	<0.330	>	mg/kg
bis(2-Ethylhexyl)phthalate	20.0	_	mg/kg	<0.330	>	mg/kg
1,1,1-Trichloroethane	\$	>	ug/kg	\$	>	ug/kg
1,1,2,2-Tetrachloroethane		>	ug/kg	څ	>	ug/kg
1,1,2-Trichloroethane	φ,	-	ug/kg	\$	>	ug/kg
1,1-Dichloroethane	Φ,	-	ug/kg	\$ '	>	ug/kg
l, 1-Dichloroethene	₽	_	ug/kg	ئ	>	ug/kg
1,2-Dichloroethane	₩	>	ug/kg	څ	>	ug/kg
1,2-Dichloropropane	₽	>	ug/kg	څ	-	ug/kg
2-Butanone	5.1	_	ug/kg	2.4	~	ug/kg
2-Chloroethylvinyl ether	,	_	ug/kg	1 0	>	ug/kg
2-Hexanone	< 50	-	ug/kg	<50	>	ug/kg
4-Methyl-2-Pentanone	<50	>	ug/kg	<50	>	ug/kg
Acetone	6.7	뽁	ug/kg	8.0	8	ug/kg
Benzene	\$	>	ug/kg	څ	>	ug/kg
Bromoform	ĉ.	>	ug/kg	ئ	>	ug/kg

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Analytical Jults at the FTA for SO Tinker Air Force Base

		1																						
	Units		ua/ka	in/ka	ua/ka	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
2-65A A1546 29 - 30	afr R)	=) =	>	>	>	>	>	>	>	_	-	-	⊃	-	>	>	⊃	>	_	_	>
2 4 S	Result		<10		ιĈ	ŵ	ۍ	~1 0	ئ	~10	ĉ,	Ĉ	,	Ĉ	ŵ	Ω	ۍ	~ 10	~10	ئ	څ.	ĉ.	ئ	څ ج
	Units		ug/kg	ua/ka	ua/ka	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
2-65A A1545 26 - 27	QFR		ם	_	_	>	>	>	>	>	>	>	8	>	>	>	>	>	-	-	>	>	>	>
2 ¥ 2	Result		<10	\$	څ.	\$	ئ	~10	ۍ	~10	\$	ئ	1.3	\$	ŵ.	ŕ	₹	,	~10	ئ	ئ	ŵ.	ئ	î,
Well/Boring: Sample ID: Depth:																					Ð		ene	Je L
	Parameters		Bromomethane	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	Dichlorobromomethane	Ethylbenzene	Methylene Chloride	Styrene	Tetrachloroethene	Toluene	Trichloroethene	Vinyl Acetate		Xylenes (total)	cis 1,3 Dichloropropene	,2-Dic	-5,	trans-1,2-Dichloroethene

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ANALYTICAL RESULTS GROUNDWATER

Well/Boring: Sample ID: Depth:	0 8 0	2-62B A1601 0 - 0		0 8 2	2-62B 11602 0 - 0		V. 4.0	2-628 11665) - 0		-2- 140	2-63B 41600 0 - 0		1
Parameters	Result	QFR	Units	Resul t	QFR	Units	Result	OFR	Units	Result	OFR	Units	
Alkalinity, Titrimetric Chemical Oxygen Demand Choride by Ion Chrom. Nitrate and Nitrite Phenolics Silica Sulfate by Ion Chrom. Total Phosphorus Aluminum Arsenic - Graphite Furnace Barium Cadmium Cadmium Cadmium Cadmium Cadmium Cadmium Cadmium Cadmium Calcium Cadmium Ca	520 87 2.9 40.010 7.3 110 0.15 8.2 40.0050 48 0.040 4.00020 4.0	D D SZZDZ ZDŠDŠŠ ZDA A	SS 1/6m 1/6m 1/6m 1/6m 1/6m 1/6m 1/6m 1/6m	330 425 897 2.7 40.010 6.9 6.9 6.0 6.0 6.0 6.0 6.0 6.0 6.0 6.0	D D D SZZDZ ZDŠDŠŠ ZDA A	se /6m /				470 470 425 3.8 40.010 8.9 40.010 6.10 6.0050			I .
) }	,	'n	<u>}</u>	٠,	,)65				2)	, /An	

	Well/Boring: Sample ID: Depth:	V KO	2-628 11601) - 0		2 0	2-62B A1602 0 - 0		0 4 0	2-62B A1665 0 - 0		2- A1	2-63B A1600 0 - 0	
Parameters		Resul t	OFR	Units	Result	QFR	Units	Result	OFR	Units	Result	OFR	Units
2,4,5-Trichlorophenol 2,4,6-Trichlorophenol 2,4-Dichlorophenol 2,4-Dinitrophenol 2,4-Dinitrophenol 2,4-Dinitrotoluene 2,6-Dinitrotoluene 2,6-Dinitrotoluene 2-Chlorophenol 2-Methylphenol 2-Methylphenol 2-Nitroaniline 3,3'-Dichlorobenzidine 3,3'-Dichlorobenzidine 4,6-Dinitro-2-methylphenol 4,6-Dinitro-2-methylphenol 4,6-Dinitro-2-methylphenol 4-Chloroaniline 4-Chloroaniline 4-Chloroaniline 4-Chloroaniline 4-Chloroaniline 4-Nitroaniline 4-Nitrophenol Acenaphthene Anthracene Benzo(a)anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(a)pyrene Benzo(b)fluoranthene	no l	\$		1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	666686666688668866666666666666666666666						666626666666262666666666666666666666666	¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬	

Well/Boring: Sample ID: Depth:		2-62B A1601 0 - 0		.,,	2-628 A1602 0 - 0		2 A	2-62B A1665 0 - 0		0 8 72	2-638 A1600 0 - 0	
Parameters	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
Benzoic Acid Benzyl alcohol Butylbenzylphthalate Chrysene Di-n-butylphthalate Di-noctylphthalate Dibenzo(a,h)anthracene Dibenzofuran Diethylphthalate Fluorene Hexachlorobenzene Hexachlorobenzene Hexachlorobenzene Hexachlorocyclopentadiene Indeno(1,2,3-cd)pyrene Isophorone Isophorone Isophorone Isophorole Isophorol	8999999999999999999999998	>>>>>>>>>>>>>	1/6m 1/6m 1/6m 1/6m 1/6m 1/6m 1/6m 1/6m	\$						\$		1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n

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Well/Boring: Sample 1D: Depth:	C) & D	2-62B A1601 0 - 0		2	2-62B 41602 0 - 0		NAO	2-62B 41665 0 - 0		0 4 0	2-63B A1600 0 - 0		
Parameters	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	a. R	Units	
Total Kieldsh Witnesse	02.0			ç	=	-							l
	20.0		mg/L	60.0	>	mg/l				<0.25	-	mg/l	
Total Suspended Solids	3.0		1/6m	5.0 25.0		1/6m				2.2		mg/l	
	2.7	=) / BE	012	=) B				ر د ر	=	1/6m	
1 1 1-Trichloroethane		=) 	· •	> =	7	,	=) - -	> :	1/6m	
1.1.2.2-Tetrachloroethane	ŝέ	> =	1/6n) ' (> =	1/60	95	> =	1/6n	≎ ⊬	> :	1/6n	
1,1,2-Trichloroethane	0.6	•) (65 	7.7	>) (S)	200	> =	1/60	2 4	> :	1/6n	
1,1-Dichloroethane	.	_	7/65	; ç	=) 	200	> =	- / b	۲,	> =	1/60	
1,1-Dichloroethene	5.7)	, (g) 1/60	6.0)) (6n	, v	> =) 	ۍ <u>د</u>	> =	1/60	
1,2-Dichloroethane	200		1/gu	550		1/6n	430	•	1/67	, ,	-	1/85	
1,2-Dichloropropane	7.0		1/gn	7.3)/bn	×100	_)/6n	\$	· =) (60 /B1	
2-Butanone	<100	⊃	ng/t	<100	>	1/gn	<2000	· >)/bn	×100) =	1/60	
2-Chloroethylvinyl ether	~10	>	ug/l	~10	>	ug/l	<200	_	ng/l	410) >	1/65	
2-Hexanone	< <u>5</u> 0	>	ng/f	< 50	>	ug/l	<1000	>	1/gn	<50	· >	1/bn	
4-Methyl-Z-Pentanone	\$ 20	>	ng/l	~ 20	>	ng/l	<1000	>	1/gn	~ 20	>	1/gn	
Acetone	, 100 , 100	>	1/gn	100	>	ug/l	230	7	ng/l	~100	>	1/gn	
Benzene Bromoform	4.4	=	1/gn	5.7		J/gn	<100 	-	ng/f	ۍ	>	ng/l	
BI OHIOT OF HI	Ç 7	> :	1/gn	Ç,	> :	J/gn	×100	- :)/gn	ζÇ,	>	l/gu	
Carbon Distriction	<u> </u>	> =	1/6n	0 v	> :	ng/	2500	> :	1/gn	°10	> :	l/gu	
Carbon Tetrachloride	ôφ	> =) (6)	2 (> =)/gn	95	> =	1/6n	٥,4	> :	1/gn	
Chlorobenzene	220))/bn	240	,) (65 1/bn	250	•) (S)	ۍ د	> =	1/65	
Chlorodibromomethane	\$	>	1/gn	ιĈ	>)/Bn	-100 -100	_)/65 1/bn	, ₁ 2	=	1/65	
Chloroethane	~10	>	1/gn	10	>	1/gn	<200	·)/bn	, ,) >)/65 1/bn	
Chloroform	4.8	-	l/gn	4.8	-	ng/l	×100	_	1/bn	ιÇ	_	7/07	
Chloromethane	~10	⊃	l/gn	^10	>	ng/l	<200	· >	J/BN	10 10) =	/a/	
Dichlorobromomethane	ۍ .	-	ug/l	ۍ.	>	ug/l	<100	-	1/gn	\$)	1/gn	
Ethylbenzene	ů,	>	ng/l	₽,	>	ng/f	~100 ~100	>	ug/l	ئ	>	1/6n	
Methylene Chloride	, <10	> :	1/gn)	ng/l	<200	¬	ng/l	~10	>	1/gn	
styrene Tetrachloroethene	C 4 7.4	- -) /Bn	¢.7	-	1/6n	, 100 100 100 100	> =	/gn	ب بر	> :	1/gn	
		ı	,	:	,	,	?	>	, /AD	,	>	ı /An	

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	ts	
	Units	/6n /6n /6n /6n /6n
2-63B 11600) - 0	QFR	ככ ככככ כ
∨ 4 0	Result	\$
	Units	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
2-628 41665) - 0	QFR	ככ ככככסכ
0.80	Result	7900 7900 7900 7900 7900 7100 7100 7100
	Units	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
2-62B 11602) - 0	QFR	כםככככםד
0 4 0	Result	1.5 8900 410 410 45 45 45 1700 140
	Units	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
-62B 1601 - 0	QFR	כםככככםר
0 8 0	Result	1.3 8300 410 410 45 45 45 130
Well/Boring: Sample ID: Depth:	Parameters	Toluene Trichloroethene Vinyl Acetate Vinyl Chloride Xylenes (total) cis 1,3 Dichloropropene cis-1,2-Dichloroethene trans 1,3-Dichloroethene
	Par	Trichlor Vinyl Ac Vinyl Ch Xylenes cis 1,3 cis-1,2- trans 1,

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Analytical Coults at the FTA for WG Tinker Air Force Base

Well/Boring: Sample 1D: Depth:	0.40	2-648 A1603 0 - 0		2- 0 A1	2-658 A1604 0 - 0	
Parameters	Resul t	Q FR	Units	Result	QFR	Units
			Ι.			
Alkalinity, litrimetric	280		mg/l as	200		mg/las
Chemical Oxygen Demand	~ 25	>	mg/l	~ 25	_	mg/l
Chloride by Ion Chrom.	34		mg/l	22		1/60
Nitrate and Nitrite	3.8		J/BIII	5.6		1/60
Phenolics	<0.010	>	mg/l	<0.010	>	J/Bm
Silica	4.3		mg/l	1		J/Bm
Sulfate by Ion Chrom.	54		mg/l	37		mg/l
Total Phosphorus	<0.10	_	mg/l	<0.10	>	J/gm
Aluminum	1.4		mg/l	0.95		J/gm
Arsenic - Graphite Furnace	<0.010	>	mg/l	<0.010	>	J/Em
Barium	0.23		mg/l	0.24		J/Bm
Cadmium	<0.0050	3	mg/l	<0.0050	3)/Bm
Calcium	29	Z	mg/l	80	z	mg/l
Chromium	<0.010	3	mg/l	<0.010	S	l/gm
Chromium VI	<0.010	>	mg/l	<0.010	>	mg/[
Copper	<0.025	3	mg/l	<0.025	3	mg/l
Iron	2.0		mg/l	1.1		
Lead - Graphite Furnace	<0.0030	>	mg/f	<0.0030	-	mg/l
Magnesium	33		mg/l	52		mg/l
Manganese	0.048	z	mg/l	0.065	z	mg/l
Mercury	<0.00020	⊃	mg/f	<0.00020	>	mg/l
Nickel	<0.040	3	mg/f	<0.040	3	mg/l
Potassium	5. 0	-	mg/l	1.7		mg/l
Selenium	.0° 0.10	3	mg/l	<0.10	3	mg/l
Silver	<0.010	3	mg/l	<0.010	3	1/6m
Sodium	95		mg/l	43		J/gm
Zinc	<0.020	3	mg/l	<0.020	š	mg/l
1,2,4-Trichlorobenzene	~1 0	>	l/gn	~10	-	l/gu
5	~ 10	>	ug/l	~10	>	ug/l
1,3-Dichlorobenzene	, 10	> :	ug/l	~10	-	ng/f
',4-Dichlorobenzene	<10	>	ng/l	<10	>	ug/l

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Analytical ...sults at the FTA for WG Tinker Air Force Base

	Sample ID: Depth:	A1603 0 - 0		V & O	2-658 A1604 0 - 0	
Parameters	Result	t OFR	Units	Result	OFR R	Units
4.5-Trichlorophenol	<10	5	1/60	-10 -10	=	1/07
4.6-Trichlorophenol	<10	=	1/01	Ç	-	/65
4-Dichlorophenol	\$.	=	7/65	2 5	=) (B)
/ Dischalphonel	7 7	o =) (S)	7 5	> :) 60
4-Dimerny (pilenot) (o :	1/gn	<u> </u>	> :) j
4-Dinitrophenol	9 ;	-) din	Ç:	-	1/gn
4-Dinitrotoluene	01>	>	l/gn	~10	>	1/gn
2,6-Dinitrotoluene	<10	⊃	l/gu	~ 10	>	1/gn
2-Chloronaphthalene	10	>	1/6n	,	_	1/bn
-Chlorophenol	\$	-	1/gn	\$	>	1/bn
2-Methylnaphthalene	10	⊃	1/bn	~10	>	1/85
2-Methylphenol	1 0	-	J/gu	^ 1 0	_	- - - -
-Nitroaniline	\$	-	ng/l	\$	¬	- S
-Nitrophenol	1 0	-	1/gn	1 0	>	1/gn
3'-Dichlorobenzidine	~10	⊃	ug/l	1 0	>	J/gn
3-Nitroaniline	\$	-	ug/l	< 25	>	J/gn
6-Dinitro-2-methylphenol	\$	⊃	ug/l	< 52	>	ug/l
4-Bromophenyl-phenylether	~10	>	ng/f	~10	_	J/gn
4-Chloro-3-methylphenol	1 0	>	ug/l	5	>	1/Bn
4-Chloroaniline	°10	>	ug/l	~ 10	>	J/gn
4-Chlorophenyl-phenylether	~10	>	ng/l	~10	>	J/gn
4-Methylphenol	\$	>	ug/l	1 0	>	1/gn
4-Nitroaniline	1 0	>	ug/l	\$	>	1/6n
4-Nitrophenol	4 25	-	1/gn	< 25	>	1/6n
Acenaphthene	1 0	>	1/gn	1 0	_	l/gu
Acenaphthylene	1 0	⊃	1/gn	~ 10	_	l/bn
Anthracene	×10	¬	1/60	~10	_	1/60
Benzo(a)anthracene	<10	_	1/80	~ 10	=	//07
Benzo(a)pyrene	×10	>	1/60	70	_	1/8/1
Benzo(b)fluoranthene	<10	=	1/00	1 0	=	//27
Renzola h i berylene	<10	=	/61	<u> </u>	=) (ES
		• =) (6)	, ,) :) S
Senzo(K)T(Uoranthene	Ξ	=	- 20	Ξ	-	

Analytical hasults at the FTA for WG Tinker Air Force Base

Benzoic Acid Result GFR Units Result GFR Un Benzyl alcohol <10 Ug/l <10 U <	Well/Boring: Sample ID: Depth:		2-64B A1603 0 - 0		0 8 0	2-65B A1604 0 - 0		
4.0	Parameters	Result	QFR	Units	Result	QFR	Units	
400 00 00 00 00 00 00 00 00 00 00 00 00	7:04 C	,	П	1, 201	710	Ξ	1, 11	ĺ
4.00	Benzole Acid	0.5	ɔ :	1/6n	2;	> :) Son	
\$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Benzyl alconol	~10	>	۱/gn	~ 10	>)/gn	
4.00	Butylbenzylphthalate	~ 10	>	l/gn	1 0	¬	1/6n	
410	Chrysene	~10	>	1/6n	1 0	_	1/6n	
410	Di-n-butylphthalate	<10	>	1/bn	<10	_	1/80	
410	Di-n-octylphthalate	<10	>	1/6n	×10)	1/60	
\$\frac{40}{40}\$ \$\frac{40}{40}	Dibenzo(a,h)anthracene	~10	>	1/6n	<10	⊃	1/60	
<pre> </pre> <pre> <pre> </pre> </pre> <pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> </pre> <pre> <pre> <pre> <pre> <pre> <</pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre></pre>	Dibenzofuran	<10	>	1/6n	<10	⊃	1/60	
\$\frac{410}{410}\$ \$\frac{410}{	Diethylphthalate	~10	>	J/Bn	~10	-	1/6n	
<pre><10</pre>	Dimethylphthalate	~10	>	J/Bn	1 0	_	1/6n	
<pre><10</pre>	Fluoranthene	~10	>	J/gn	1 0	>	J/Bn	
<pre><10</pre>	Fluorene	~10	>	l/gn	~10	>	1/6n	
<pre><10</pre>	Hexachlorobenzene	~10	>	1/gn	~ 10	>	1/6n	
<pre><10</pre>	Hexachlorobutadiene	~10	>	l/gn	1 0	⊃	1/6n	
<pre><10</pre>	Hexachlorocyclopentadiene	~10	>	l/gn	~10	>	1/gn	
<pre><10</pre>	Hexachloroethane	~10	>	ng/l	~10	_	1/gn	
<pre><10</pre>	Indeno(1,2,3-cd)pyrene	~10	>	1/gn	~10	>	1/gn	
<pre><10</pre>	Isophorone	~ 10	>	ng/l	~ 10	>	1/6n	
<pre><10</pre>	N-Nitroso-di-n-propylamine	1 0	>	1/gn	~10	_	1/gn	
<pre><10</pre>	N-Nitrosodiphenylamine	~10	>	ng/f	~10	⊃	1/gn	
<pre><10</pre>	Naphthalene	1 0	>	ng/l	~10	>	1/gn	
<pre><25</pre>	Nitrobenzene	1 0	>	ng/l	,	>	1/6n	
<pre><10</pre>	Pentachlorophenol	< 52	>	ug/l	4 25	⊃	1/6n	
<pre><10</pre>	Phenanthrene	~ 10	>	ug/l	~10	>	1/6n	
<pre><10</pre>	Phenol	~10	>	l/gn	~10	>	1/6n	
<pre><10</pre>	Pyrene	~ 10	>	ug/l	1 0	>	1/6n	
<pre><10</pre>	bis(2-Chloroethoxy)methane	~10	>	ug/l	^	>	J/gn	
<pre><10</pre>	bis(2-Chloroethyl)ether	1 0	>	ng/l	~ 10	_	1/6n	
450 mg/l 650 U	bis(2-Chloroisopropyl)ethe	~10	- :	ug/l	,	-	1/6n	
USSOIVED SOLIDS DESCRIPTION TO THE DESCRIPTION OF THE PROPERTY	bis(2-Ethylhexyl)phthalate	01°	>	1/gn	~10 .75	>	l/gn	
		450		J/gm	000		mg/l	

Analytical kesults at the FTA for WG Tinker Air Force Base

		<u> </u>	
	Units		
2-658 A1604 0 - 0	QFR R	o	
0 8 0	Result	\$.7.3.2.888888888888888888888888888888888	
	Units		
2-64B A1603 0 - 0	QFR	2 2222272222222222222	
0 4 0	Result	6.5.5.5.5.5.5.5.5.5.5.5.5.5.5.5.5.5.5.5	
Well/Boring: Sample ID: Depth:	Parameters	Total Kjeldahl Nitrogen Total Suspended Solids Total Suspended Solids The IR 1,1,2-Trichloroethane 1,1,2-Trichloroethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 2-Butanone 2-Butanone 2-Chloroethylvinyl ether 2-Hexanone 4-Methyl-2-Pentanone Acetone Benzene Benzene Carbon Disulfide Carbon Disulfide Carbon Disulfide Carbon Disulfide Chlorobenzene Chlorobenzene Chloroethane Chloroethane Chloroethane Chloroethane Chloroethane Chloroethane Chloroethane Chloroethane Chloroethane Chloromethane Chloroethane Ethylbenzene Methylene	

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3	Well/Boring: Sample ID: Depth:	N & O	2-64B A1603 0 - 0		~~0	2-65B A1604 0 - 0		
Parameters		Result	OFR	Units	Result	OFR	Units	
Toluene		ئ د	_	1/60	\$	ם	1/60	1
Trichloroethene		%		1/6n	8	•	-/s	
Vinyl Acetate		~10	⊃	1/6n	~10	_	1/60	
Vinyl Chloride		~1 0	_	1/gn	1 0	_	J/g/l	
Xylenes (total)		ئ	>	1/gn	ŵ	_	1/60	
cis 1,3 Dichloropropene		ئ	-	1/gn	ŵ	_	1/60	
cis-1,2-Dichloroethene		39		1/6n	54	,	- / bn	
trans 1,3-Dichloropropene	9	÷	>	1/6n	ŵ	_	1/80	
trans-1,2-Dichloroethene		3.5	7	ug/l	₽	· >	ng/l	

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Well/Boring: Sample ID: Depth:	-2- 0	-62A 1648 - 0		0.40	2-63A 11607 1 - 0		2. A1	2-64A A1608 0 - 0		0 4 0	2-65A A1609 0 - 0	
Parameters	Resul t	QFR.	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR.	Units
Alkalinity, Titrimetric	390		ma/!	380		Jan Jan	350		96 / bm	100		
Chemical Oxygen Demand	<25	¬	J/gm	425	>	2)/gm	2 25	-		\$)	SB 1/BIII
Chloride by Ion Chrom.	9.9)/gm	17		mg/L	56		l/gm	54		mg/l
Nicrate and Nicrite	0.0 0.0	=	J/gm	5.5	:	J/gm	1:1		J/Bm	0.78		mg/f
rnenolics Silica	010.05	>	J/gm	<0.010	>	mg/l	<0.010	>	mg/l	<0.010	>	mg/l
Sulfate by Ion Chrom.	- 2		1/6m	8.8	3	1/6m	8.6	=	J/gm	£ 6	3	mg/l
Total Phosphorus	0 10	=) / CIII	, c	2 2) / E	÷ <	z =	1/6III	4 4	2 :	1/6E
Aluminum	. r)) / E	32.13	E 2) / Bill	0.00	5 =	1/6m	, c	z :	1/6m
Arsenic - Graphite Furnace	<0.010	¬)/6III	0.018	2) / E	<0.010	z =	1/6	6.0 010 010	z =)/BIII
Barium	0.56		J/Bm	3.7)/bll	0.56	,) /BIII	02.00	=) / DE
Cadmium	<0.0050	>	mg/l	9900.0		mg/l	<0.0050	>)/6m	<0.0050) >)/6III
Calcium	68		mg/l	9		ոց/լ	61		J/gm	36		l/gm
Chromium	0.021	•	mg/l	0.12	Z:	mg/l	0.075	z	mg/l	0.053	z	mg/l
Corrollum VI	0.070	> :	mg/l	<0.010	>	J/Gm	<0.010	>	J/gm	<0.010	>	mg/l
	<0.02 1 1	-) / GE	0.10)/Bm	<0.025	-	1/gm	<0.025	-	mg/l
lead - Graphite Furbace	02UU U>	=) 	7,0) ju	0.0		1/6E	4.5	=) /BII
Magnesium	45	•) / BIII	57) / E	35) / SEE	10.0030	>	1/6m
Manganese	0.016		mg/l	1.2	Z	J/Em	0.12	z)/EII	0.067	z) / E
Mercury	<0.00020	-	mg/l	<0.00020	_	mg/l	<0.00020	_	mg/l	<0.00020	_]/bш
Nickel	<0.040 -	> :	mg/l	0.079	z	mg/l	0.067	z	mg/l	<0.040	3	J/gm
Potassium	0.0	- :	mg/t	7.3		mg/l	5. 0	_	mg/l	<5.0	>	mg/l
setenium	.0.010 0.010	- :	mg/t	.0.10 	3	mg/l	<0.10	3	mg/l	<0.010	3	J/6m
STIVE	0.0.0	>	mg/l	<0.010 61.010	>	mg/l	<0.010	-	mg/l	<0.010	_	mg/l
Sogium Fire	τ ,	:	mg/t	3		mg/l	23		mg/l	22		mg/l
4.3 / Taithleatheans	070.05	> :	mg/l	0.10	z :	mg/l	0.021	Z	mg/l	0.028	z	mg/l
1,2,4-Irichlorobenzene	0 5	> :) dn	01,	> :	1/gn	°10	-	ng/l	~10	>	ng/l
1,2-Dichlorobenzene	25	> =	1/6n	0 5	> :)/6n	010	> :	1/gn	, 10	> :)/gn
1.4-Dichlorobenzene	200	> =	1/6n 1/6n	25	> =	1/6n	25	> =	1/6n	5,4	> =	1/6n
	•	•		<u>?</u>	•	. 65	2	•	- An	2	>	- /6n

	Well/Boring: Sample ID: Depth:	.9. 1.0.	-62A 1648 - 0		.,,,	2-63A A1607 0 - 0		N & D	2-64A A1608 0 - 0		ONO	2-65A A1609 0 - 0	
Parameters		Result	QFR	Units	Result	QFR	Units	Result	Q FR	Units	Result	OFR	Units
2,4,5-Trichlorophenol 2,4,6-Trichlorophenol 2,4-Dinflorophenol 2,4-Dinfrophenol 2,4-Dinfrophenol 2,6-Dinfroplene 2,6-Dinfrophenol 2-Chlorophenol 2-Chlorophenol 2-Methylhaphthalene 2-Nitrophenol 3,3'-Dichlorobenzidine 3,3'-Dichlorobenzidine 4-Bromophenyl-phenylether 4,6-Dinfro-2-methylphenol 4,6-Dinfro-3-methylphenol 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenylether 4-Chlorophenyl-phenylether 8-Chlorophenyl-phenylether 8-Chlorophenyl-phenylether Achaphthene Achaphthene Achaphthene Benzo(a) phyrene Benzo(a) fluoranthene Benzo(a), i)perylene Benzo(a), i)perylene	enol her ther	\$		1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	\$	2222222222222222222222222		\$		1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	\$\$\$\$%\$		1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n

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QFR = Qualifier
Analytical data has not been validated.

	Well/Boring: Sample ID: Depth:	0 Y is	-62A 1648 - 0		0 4 8	2-63A A1607 0 - 0		NAO	2-64A A1608 0 - 0		-2.40 0.42	2-65A A1609 0 - 0	
Parameters		Result	QFR	Units	Result	QFR	Units	Result	OFR	Units	Result	Q FR	Units
Benzoic Acid Benzyl alcohol Butylbenzylphthalate Chrysene Di-n-butylphthalate Di-n-octylphthalate Dibenzofuran Diethylphthalate Dibenzofuran Diethylphthalate Dimethylphthalate Fluoranthene Fluoranthene Hexachlorobenzene Hexachlorobenzene Hexachlorobenzene Hexachlorobenzene Hexachlorobenzene Hexachlorobenzene Hexachlorobenzene Hexachlorobenzene Hexachlorophenol N-Nitroso-di-n-propylamine N-Nitroso-di-n-propylamine N-Nitroso-di-n-propylamine N-Nitroso-di-n-propylamine N-Nitrobenzene Pentachlorophenol Phenanthrene Phenol Phenol Phenanthrene Phenol Phenanthrene Phenol Phenanthrene Phenol Phenanthrene Phenol	ine ine ine ithe ate	\$		1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	\$	¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬	1/6m 1/6m 1/6m 1/6m 1/6m 1/6m 1/6m 1/6m	\$		1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	66666666666666666666666666666666666		

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 that specific analysis
J = Concentration is an estimated value
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< = Not detected
QFR = Qualifier
Analytical data has not been validated.</pre>

Well/Boring: Sample 1D: Depth:		2-62A A1648 0 - 0		27	2-63A 41607 0 - 0		2 A 0	2-64A 41608 0 - 0		0 42	2-65A A1609 0 - 0	
Parameters	Result	OFR	Units	Result	OFR	Units	Result	OFR	Units	Result	QFR	Units
Total Kjeldahl Nitrogen Total Organic Carbon Total Suspended Solids TPH - IR 1,1,1-Trichloroethane 1,1,2-Tetrachloroethane 1,1-Dichloroethane 1,1-Dichloroethane 1,1-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 1,2-Dichloroethane 2-Butannone 2-Butannone 2-Butannone 3-Butannone 4-Methyl-2-Pentannone 6-Chloroethane 6-Carbon Tetrachloride Chlorobenzene Chlorobenzene Chloroethane Chloroethane Chloroethane Chloromethane Chloromethane Ethylbenzene Ethylbenzene Ethylbenzene Methylene Chloride Styrene	\$\cdot \pi		1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	6.1.50.000000000000000000000000000000000	×55 5555555555555555555555555555555555	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	6-186. 8. 8. 8. 8.	×5	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	2.1.5.6.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0.0	z>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
ופרו מכוויכו כריויכויכ	,)		,	,	,)	,			•

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	Well/Boring: Sample ID: Depth:	Ċ¥Ο	-62A 1648 - 0		0 \$ 0	2-63A 11607 0 - 0		N 4 0	2-64A 41608 0 - 0		0 \$ 0	2-65A 41609 0 - 0	
Parameters		Result	QFR	Units	Result	a R	Units	Result	OFR	Units	Result	QFR	Units
Toluene Trichloroethene Vinyl Acetate Vinyl Chloride Xylenes (total) cis 1,3 Dichloropropene cis-1,2-Dichloroethene trans 1,3-Dichloroethene	ne sene ine	\$ 7 5668888	כככככככיכ	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	\$\$\$\$\$\$\$\$\$	2222222	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	გბ ტტგ ბ ბბბ	2222222	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	\$\$\frac{2}{5}\$\$\$\$\$\$\$\$\$\$	2222222	1/6n 1/6n 1/6n 1/6n 1/6n

ANALYTICAL RESULTS QUALITY CONTROL - SOIL

Analytical QC results at the FTA for SQ Tinker Air Force Base

Well/Boring: Sample 1D: Depth:		2-62A A1561-MS 2 - 3		A15	2-62A A1561-MSD 2 - 3		2- A15	2-63A A1555-MS 2 - 3		A15	2-63A A1555-MSD 2 - 3		A11	2-64A A1548-MS 2 - 3	
Parameters	Result	QFR	Units	Result	OFR	Units	Result	QFR	Units	Result	Q.F.R	Units	Result	QFR	Units
Aluminum Arsenic - Graphite Furnace Barium Beryllium Cadmium Chromium Chromium VI Copper Iron Lead - Graphite Furnace Mercury Nickel Silver Zinc 1,2,4-Trichlorobenzene 2,4,6-Tribromophenol 2,4-Dinitrotoluene 2,4,6-Tribromophenol 2,4-Dinitrotoluene 2,5-Luorobhenol 2,4-Dinitrotoluene 2,6-Nitrophenol 2-Fluorobhenol 2-Fluorobhenol 2-Fluorobhenol 2-Fluorobhenol 2-Fluorobhenol 2-Fluorophenol 2-Fluorobhenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol 2-Fluorophenol 3-Fluorophenol 4-Nitrobenzene-D5 8-Freenenenenenenenenenenenenenenenenenene	47.75 100 100 100 100 100 100 100 10		**************************************	7,7 1,7 1,7 1,7 1,7 1,7 1,7 1,7 1,7 1,7		**************************************	951 90 90 90 90 110 88 90 90		**************************************	1406 67 67 88 88 88 88 73 73 73 73		%%%%%%%%%%% 	1371 100 100 100 101 101 101 101 100 101 100 101 1		**************************************
Pyrene Terphenyl-D14	287		%% % % % % % %	65 60 60 60		7. 7. 7. 7. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0. 0.	•						282		%rec %rec %rec

B = Analyte was also found in sample blank
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 N = Sample is outside of Matrix Spike QC limit
 N = Sample as not been validated.

Analytical QC results at the FTA for SQ Tinker Air Force Base

Jek S	Well/Boring: Sample ID: Depth:	2 A 1	2-62A A1561-MS 2 - 3		A1	2-62A A1561-MSD 2 - 3	_	<u>«</u>	2-63A A1555-MS 2 - 3		A	2-63A A1555-MSD 2 - 3		A1 A2	2-64A A1548-MS 2 - 3	
Parameters		Resul t	OFR	Units	Result	OFR	Units	Result	OFR	Units	Result	OFR.	Units	Result	QFR	Units
1,1-Trichloroethane 1,2,2-Tetrachloroethane 1,2-Trichloroethane																
,1-Dichloroethane ,1-Dichloroethene		101		%rec	101		%rec	103		%rec	101		%rec	103		%rec
1,2-Dichloroethane-D4 1,2-Dichloropropane Butanone	δ.	&		%rec	101		% nec	106		%rec	108		%rec	105		%rec
Z-Chloroethylvinyl ether Z-Hexanone 4-Methyl-Z-Pentanone					<50	-	%rec									
Acetone Benzene Bromofuorobenzene Bromoform Bromomethane Carbon Disulfide	93	m /-		% %rec c	92		%rec %rec	96		%rec %rec	66 66		%rec %rec	102 98		%rec %rec
Charbon letrachioride Chlorobenzene Chloroethane Chloromethane Dichloromethane Ethylbenzene Methylene Chloride	%	4		۲ د د	53		% Nec	%		% o	86		%rec	96		%rec
retrachloroethene Toluene Toluene-D8	6°	94 102		% % % rec	94 101		% % % rec	96 102		%rec %rec	98 106		%rec %rec	98 103		%rec %rec

Analytical QC results at the FTA for SQ Tinker Air Force Base

	Well/Boring: Sample ID: Depth:	W.	2-62A A1561-MS 2 - 3		2 TA 2 TC	2-62A A1561-MSD 2 - 3		A12	2-63A A1555-MS 2 - 3		A15	2-63A A1555-MSD 2 - 3	_	,4 , 4	2-64A A1548-MS 2 - 3	
Parameters		Result QFR Units	QFR R	Units	Result afR	QFR	Units	Result QFR Units	QFR	Units	Result afR Units	a F.R	Units	Result	QFR	Units
Trichloroethene Vinyl Acetate Vinyl Chloride Xylenes (total) cis 1,3 Dichloropropene cis-1,2-Dichloroethene trans 1,3-Dichloropropene	ne pene ene ene	&		% 76 C	62		× 5 6	82		% Tec	82		%rec	2		%rec

Well/Boring: Sample ID: Depth:		2-64A A1548-MSD 2 - 3		2.5 2.5	2-65A A1540-MS 2.5 - 3.5	·	A1	2-65A A1540-MSD 2.5 - 3.5		II.	FIELDOC A1547 0 - 0	
Parameters	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	QFR	Units
Aluminum	1155		%rec	1296		%rec	1122		26.2			
Arsenic - Graphite Furnace	8		%rec	116		% % Fec	117		2 N			
Barium	1358		Xrec	338		% 2.00	12%		200			
Beryllium	89		z z Sec	87		. % 	87		% Fec			
Cadmium	8		%rec	82		Xrec	82		%rec			
Chromium	93		%rec	95		%rec	%		%rec			
Chromium VI	2		%rec	25		Xrec	26		%rec			
Copper	8		%rec	87		%rec	87		%rec			
Iron	448		%rec	789		%rec	889		%rec			
Lead - Graphite Furnace	129		%rec	190		%rec	256		%rec			
Mercury	110		%rec	110		%rec	120		%rec			
Nickel	83		%rec	8		%rec	83		%rec			
Silver	8		%rec	82		%rec	82		%rec			
ZINC	35		%rec	25		%rec	8		%rec			
1,2,4-Trichlorobenzene	6 ;		%rec	94		%rec	34		%rec			
1,4-Dichlorobenzene	2.		%rec	40		%rec	62		%rec			
2,4,6-Tribromophenol	6 2		%rec	83		%rec	ĸ		%rec			
2,4-Dinitrotoluene	21		%rec	70		%rec	36		%rec			
Z-Chlorophenol	<u> </u>		%rec	88		%rec	92		%rec			
Z-Fluorobiphenyl	\$;		%rec	101		%rec	82		%rec			
Z-Fluorophenol	2 5		Xrec	2		%rec	63		%rec			
4-Chloro-3-methylphenol	2:		%rec	26		%rec	62		%rec			
4-Nitrophenol	9		%rec	22		%rec	26		%rec			
Acenaphthene	2 8		%rec	26		%rec	67		%rec			
N-Nitroso-di-n-propylamine	9/		%rec	52		%rec	39		%rec			
Nitrobenzene-D5	8		%rec	8		%rec	89		%rec			
Pentachlorophenol	6 ;		%rec	80		%rec	63		%rec			
Phenol	~ 1		%rec	9:		%rec	69		%rec			
Phenol -05	21		%rec	81		%rec	2		%rec			
Pyrene	8 1		%rec	45		%rec	43		%rec			
Terphenyl -D14	7		%rec	80		%rec	92		%rec			

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3	Well/Boring: Sample ID: Depth:	2- A154	2-64A A1548-MSD 2 - 3		, * .	2-65A A1540-MS 2.5 - 3.5		A15	2-65A A1540-MSD 2.5 - 3.5		I.P.	FIELDQC A1547 0 - 0	
Parameters		Result	OFR	Units	Result	9. 8.	Units	Result	OF.R	Units	Result	af.R	Units
1,1,1-Trichloroethane 1,1,2,2-Tetrachloroethan 1,1,2-Trichloroethane	a.										δδ	>>=	1/gu 1/gu
1,1-Dichloroethane 1,1-Dichloroethene		106		%rec	95		%rec	%		%rec	ያ የ) (6n 1 / (6n
1,2-Dichloroethane-D4 1,2-Dichloropropane		104		%rec	105		%rec	107		%rec	ა <u>ნ</u> ა	- -	ug/l %rec ug/l
2-Butanone 2-Chloroethylvinyl ether 2-Hexanone 4-Methyl-2-Pentanone											\$ 5 5 5 5)/6n 1/6n
Benzene Bromofluorobenzene Bromoform Bromomethane Carbon Disulfide		102 98		% % 7 % 6 C	104 93		% %rec %	105 92		% % %rec %rec		בככ ככ	ug/1 wrec ug/1 ug/1
Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane		&		%rec	107		% % Tec	108		%rec	~~~ , 5~~5~	ככככרככ	
Ethylbenzene Methylene Chloride Styrene Tetrachloroethene Toluene Toluene-D8		101 105		% % % % % % % % % % % % % % % % % % %	105 103		X X Tec	108 108		% % % % %	δ ξδδ δδ	,,,,,,,	1,000 1,000

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Analytical QC results at the FTA for SQ Tinker Air Force Base

	ţş	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
	Units	5 5 5 5 5 5
: IELDQC A1547 0 - 0	QFR	222222
I &	Result QFR	2662222
910	Units	% 0
2-65A 41540-MSD 2.5 - 3.5	OFR	
2.5 2.5	Result QFR Units	87
សិស	Result QFR Units	%
2-65A A1540-MS 2.5 - 3.5	QFR	
, A	Result	85
۵	Units	% Fec
2-64A 1548-MSD 2 - 3	QFR	
∢	Result	78
Well/Boring: Sample ID: Depth:		pene ene ropene thene
	Parameters	Trichloroethene Vinyl Acetate Vinyl Chloride Xylenes (total) cis 1,3 Dichloropropene cis-1,2-Dichloroethene trans 1,3-Dichloropropene

ANALYTICAL RESULTS QUALITY CONTROL - WATER

Analytical QC results at the FTA for WQ
Tinker Air Force Base

Well/Boring: Sample ID: Depth:		2-62A A1648-MS 0 - 0	Ø	A	2-62A A1648-MSD 0 - 0		, A	2-65A A1609-MS 0 - 0		A1t	2-65A A1609-MSD 0 - 0		A12	2-658 A1604-MS 0 - 0	
Parameters	Result	QFR.	Units	Result	gFR R	Units	Result	OFR	Units	Result	OFR	Units	Result	OFR	Units
Alfolinity Titolmotoric	200			6		;	55			1					
Charital Outron Desert	060		- E	0 6 7		- /6E	<u>8</u>		mg/las			mg/las	510		mg/las
Chemical Oxygen Demand	5		%rec	104		%rec	106		%rec	110		%rec	106		%rec
Chloride by Ion Chrom.	3 3		%rec	86		%rec	8		%rec	91		%rec	8		%rec
Nitrate and Nitrite	0 8		%rec	2		%rec	110		%rec	8		%rec	96		%rec
Phenol ics	5		%rec	87		%rec	78		%rec	81		%rec	06		%rec
Silica	126		%rec	126		%rec	76		%rec	108		%rec	63		%rec
Sulfate by Ion Chrom.	\$		%rec	81		%rec	62		%rec	69		%rec	28		%rec
Total Phosphorus	105		%rec	104		%rec	0		%rec			%rec	88		2 4
Aluminum	101		%rec	101		%rec	120		%rec	133		%rec	100		%rec
Arsenic - Graphite Furnace	109		%rec	108		%rec	76		%rec	107		%rec	93		%rec
Barium	26		%rec	90		%rec	106		%rec	105		%rec	98		20.2%
Beryllium)	}		}
Cachnium	26		%rec	86		%rec	8		%rec	81		%rec	2		700%
Calcium	109		%rec	130		%rec	26		%rec	26		%rec	121		75.67
Chromium	26		%rec	26		%rec	8		%rec	2		%rec	. 6		201%
Chromium VI	102		%rec	86		%rec	102		%rec	104		%rec	88		20.2
Copper	%		%rec	%		%rec	82		%rec	. 08		%rec	2		7,07
Iron	&		%rec	100		%rec	82		%rec	100		22.8	86		2 0
Lead - Graphite Furnace	96		%rec	26		%rec	106		%rec	124		%rec	101		20.22
Magnesium	104		%rec	117		%rec	%		%rec	96		%rec			22.62
Manganese	3		Xrec	76		%rec	22		%rec	22		%rec	2		%rec
Mercury	123		Xrec	124		%rec	116		%rec	118		%rec	111		7.50
Nickel	%		%rec	95		%rec	2		%rec	62		%rec	. 22		20.2%
Potassium	11		%rec	113		%rec	102		%rec	102		%rec	: 8		20.2
Selenium	\$		%rec	8		%rec	81		%rec	78.		201%	22		7 2 2
Silver	55		%rec	95		%rec	85		% 7	2 6		2 2 2	7 8) e
Sodium	65		%rec	22		%rec	98		%rec	88		%rec	88		70.7%
Zinc	%		%rec	96		%rec	2 8		% 200	!2		% 20 %	2,2		ر د م
1,2,4-Trichlorobenzene	80		%rec	28		%rec	8		%rec	87		%rec	; K		2 P. P. C.
1, 2-Dichlorobenzene												} :)		}
1,3-Dichlorobenzene															

Analytical QC results at the FTA for WQ Tinker Air Force Base

	Units	%rec	% 2	%rec	%rec	%rec %rec				%rec		%rec %rec
2-658 A1604-MS 0 - 0	OFR											
₹	Result	7	59	69	8	23				88		83
	Units	%rec	%rec	%rec	%rec	%rec %rec				%rec		%rec %rec
2-65A A1609-MSD 0 - 0	OFR											
, V	Result	83	89	22	75	88				82		84
	Units	%rec	%rec	%rec	%rec	%rec %rec				%rec		%rec %rec
2-65A A1609-MS 0 - 0	OFR											
⋖	Result	18	86	81	88	3.5				35		93
_	Units	%rec	%rec	%rec	%rec	Arec Arec				%rec		% %
2-62A A1648-MSD 0 - 0	OFR											
A1	Result	16	8	76	06	\$ 5				26		37 102
10	Units	%rec	%rec	%rec	% Shec	 				%rec		%rec %rec
2-62A A1648-MS 0 - 0	QFR											
∢	Result	85	06	76	85	288				*		36 102
Well/Boring: Sample ID: Depth:									enol			
	Parameters	1,4-Dichlorobenzene	2,4,6 TRIBROWOPHENOL 2,4,6 Tribromophenol 2,4,6 Trichlorophenol 2,4-0ichlorophenol 2,4-0imethylphenol	2,4-Dinitrophenol 2,6-Dinitrotoluene 2,6-Dinitrotoluene	2-chlorophenol	2-FLUOROPHENOL 2-FLUOROPHENOL 2-Fluorobiphenyl	2-Fluorophenol 2-Methylnaphthalene 2-Methylphenol	2-Nitrophenol 2-Nitrophenol 3,3'-Dichlorobenzidine	<pre>3-Nitroanitine 4,6-Dinitro-2-methylphenol 4-Bromophenyl-phenylether</pre>	4-Chloroaniline	4-Untolophenyt-prenytetrier 4-Methylphenol 4-Nitroaniline	4-Nitrophenol Acenaphthene

Analytical QC results at the FTA for WQ Tinker Air Force Base

	Well/Boring: Sample ID: Depth:	A	2-62A A1648-MS 0 - 0		A1.	2-62A A1648-MSD 0 - 0	_	A15.	2-65A A1609-MS 0 - 0		₹	2-65A A1609-MSD 0 - 0		A	2-65B A1604-MS 0 - 0	
Parameters		Result	OFR	Units	Result	OFR	Units	Result	OFR	Units	Result	OFR	Units	Result	OFR	Units
Acenaphthylene Anthracene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(k)fluoranthene Benzo(k)fluoranthene Benzo(k)fluoranthene Benzo(k)fluoranthene Benzo(k)fluoranthene Benzo(a)horanthene Benzo(a, h)menthalate Di-n-octylphthalate Di-n-octylphthalate Di-n-octylphthalate Di-n-octylphthalate Di-n-octylphthalate Di-n-octylphthalate Fluoranthene Fluoranthene Fluoranthene Hexachlorobenzene Hexachlorobenzene Hexachlorocyclopentadiene Hexachlorocyclopentadiene Hexachlorocyclopentadiene Hexachlorocyclopentadiene	9															
Isophorone N-Nitroso-di-n-propylamine N-Nitrosodimberylamine	mine	103		%rec	101		%rec	62		%rec	80		%rec	83		%rec
NITROBENZENE-D5 Naphthalene Nitrobenzene Nitrobenzene-D5		26		Xrec	26		%rec	92		%rec	85		%rec	16		%rec

Analytical QC results at the FTA for WQ Tinker Air Force Base

Units	%rec %rec	%rec	%rec %rec		mg/l %rec	%rec mg/{	% Pec	%rec	%rec	%rec
Q FR										
Result	89 89	83	90 84		620 92	114 38	2	100	&	26
Units	%rec	%rec	%rec %rec		mg/l %rec	%rec mg/t) 	%rec	% %	%rec
OFR										
Result	79	88	95		260 68	140	8	103	%	103
Units	%rec %rec	%rec	%rec %rec		mg/l %rec	%rec mg/l	<u>.</u>	%rec	%rec	%rec
QFR.										
Result	79 113	82	92 85		260 82	140 140 140	2	109	%	102
Units	%rec %rec	%rec	%% % % % % %		mg/l %rec	Arec mg/l	3	%rec	%rec	%rec
OFR										
Result	75 70 70 70	39	124 114		440 102	\$ \$ \$	3	7 8	107	88
Units	%rec %rec	%rec	%rec %rec		mg/l %rec	Arec mg/l	} •	Xrec	% Cec	%rec
QFR										
Result	06 07	38	123 113		100	70 <u>7</u> 74 84	i	88	104	16
Parameters	HENOL-D5 entach lorophenol	nenalitii elle henol henol - DS	renor by grehenyl - D14	is(2-Chloroethoxy)methane is(2-Chloroethyl)ether is(2-Chloroisopropyl)ethe	otal Dissolved Solids otal Kjeldal Nitrogen		1,1.1-Trichloroethane 1,2,2-Tetrachloroethane 1,2-Trichloroethane 1-Dichloroethane	1-Dichloroethene	2-Dichlorocthane-D4 2-Dichloropropane Butanone Chlorocthylvinyl ether Hexanone	4-Methyl-2-Pentanone Acetone Benzene
	Result QFR Units Result QFR Units Result QFR Units Result QFR	ers Result afR Units Result afR Units	Result AFR Units Un	Fersult af Units Result af	40 Xrec 40 Xrec 79 Xrec 79 Xrec 80 38 Xrec 39 Xrec 92 Xrec 86 Xrec 83 123 Xrec 124 Xrec 92 Xrec 95 Xrec 90 113 Xrec 114 Xrec 85 Xrec 95 Xrec 90	Result of Runits Result of Runits<	Result of Runits Result of Runits<	Result GFR Units Result GFR GFR GFR GFR GFR Units Result GFR	Result of Mits Result	40 Xrec 40 Xrec 113 Xrec 101 Xrec 80 Xrec 90 80 80 Xrec 90

Analytical QC results at the FTA for WQ Tinker Air Force Base

	Well/Boring: Sample 10: Depth:	~ ₹	2-62A A1648-MS 0 - 0		.	2-62A A1648-MSD 0 - 0		, A	2-65A A1609-MS 0 - 0		A1	2-65A A1609-MSD 0 - 0		A1	2-65B A1604-MS 0 - 0	
Parameters		Result	OFR	Units	Result OFR Units	o F.R	Units	Result OFR	OF.R	Units	Result	QFR.	Units	Result	OFR .	Units
Bromofluorobenzene Bromoform Bromomethane		26		%rec	93		%rec	102		%rec	102		%rec	86		%rec
Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane		100		%rec	26		%rec	101		%rec	102		%rec	95		%rec
Chloromethane Dichlorobromomethane Ethylbenzene Methylene Chloride																
Styrene Tetrachloroethene Toluene Toluene-D8		00 100		%rec %rec	%8		% % Te C	100		% % Pec	101		%rec	83		%rec
Trichloroethene Vinyl Acetate Vinyl Chloride Xylenes (total)		88		%rec	78		%rec	8		% 29 C	366		. % 	85		% % c c
cis-1,2 Dichloroethene cis-1,2 Dichloroethene trans-1,2-Dichloropropene trans-1,2-Dichloroethene	a de															

Units

FIELDOC A1566 0 - 0	r QFR																															
	Result																															
	Units																															
FIELDQC A1560 0 - 0	QFR																															
L.	Result																															
	Units									1,000) (Sill) 	7	7 6	- /BII	,	1/6m	7,00	7 / 5) - C) [8]		7	7	2		1, 000	1/6	17	1/6E	,	ng/l
FIELDOC A1554 0 - 0	QFR									=	> =	> =	> =	> =	>	Ξ	> =	> =	> =	=)		Ξ	=	•		=	>	:	> =) ⊃	-
I. A	Result									00 00	010	200	07.07	0.000	0000	010	20.00	<0.050	36.0	0200			<0.0000	07000			010	20.00	000	<0.020 <10	1 0	~10
	Units																															
FIELDQC A1553 0 - 0	QFR R																															
L	Result																															
	Units	mg/l as		Zrec	%rec	%rec	%rec	Xrec	%rec	%rec	%rec	%rec)	%rec	Xrec	Xrec	72.60	% 7.ec	% Fec	%rec	%rec	%rec	%rec	%rec	Xrec	Xrec	Xrec	%rec	7,00	%		
2-65B A1604-MSD 0 - 0	OFR																															
A16	Result	7	104	26	75	85	81	62	96	92	33	81		92	95	92	88	92	8	86	93	74	112	74	95	22	92	78	ĸ	80		
Well/Boring: Sample ID: Depth:	Parameters	Alkalinity, Titrimetric	Chemical Oxygen Demand	Chloride by Ion Chrom.	Nitrate and Nitrite	Phenol ics	ເສ	Sulfate by Ion Chrom.	Total Phosphorus	Aluminum	Arsenic - Graphite Furnace		Beryllium	5.	ign	Chromium	Chromium VI	Lo		Lead - Graphite Furnace		Se			Potassium					-Trichlorobenzene	Jichlorobenzene	,3-Dichlorobenzene
		Alk	S F F	5	Z.	Pher	Silica	Sult	Tota	Alu	Arse	Barium	Ber,	Cadmium	Calcium	Chro	Chro	Copper	I ro	Lead	Magn	Mang	Mercury	Nickel	Pota	Selenium	Silver	Sodium	Zinc	1,2,	4,	-5,1

Analytical QC results at the FTA for WQ Tinker Air Force Base

	Units																													
FIELDQC A1566 0 - 0	QFR																													
E 40	Result																													
	Units																													
FIELDQC A1560 0 - 0	OFR																													
ш.	Result																													
	Units	1/6n	1/6n	%rec	1/gn	1/6n 1/pn)/6n	1/6n	1/gn	1/6n	J/gn			%rec	%rec	ug/l	1/gn	1/gn	1/6n	ng/f	ا/gu	1/gn	1/6n	1/6n)/6n	1/6n	J/gn	1/6n)/6n	1/6n
FIELDAC A1554 0 - 0	OFR.)	-		> =	> =)	>	>	-	>					>	>	>	>	>	>	>	>	>	>	>	>	-	> :	>
I.F.	Result	¢10	01>	37	6 5	200	425	1 0	~10	^10	<10			31	53	^10	~10	ć 25	1 0	1 0	~ 52	\$	1 0	1 0	~10	10	~10	×10	\$ 55	~10
	Units																													
FIELDOC A1553 0 - 0	OFR																													
H 70	Result																													
_	Units	%rec	%rec					%rec			%rec	%rec	%rec											%rec				;	%rec	Arec
2-65B A1604-MSD 0 - 0	QFR																													
A16	Result	82	23					69			63	%	92											25				í	æ 8	8
Well/Boring: Sample ID: Depth:																						enol	her	_		ther				
	Parameters	1,4-Dichlorobenzene	2,4,6-TRIBROMOPHENOL	2,4,6-Iribromophenol	2,4,6-Trichlorophenol	2,4-Dimethylphenol	2,4-Dinitrophenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene	2-Chloronaphthalene	2-Chlorophenol	Z-FLUOROBIPHENYL	2-FLUOROPHENOL	2-Fluorobiphenyl	Z-Fluorophenol	2-Methylnaphthalene	2-Methylphenol	2-Nitroaniline	Z-Nitrophenol	3,5'-Dichlorobenzidine	5-Nitroaniline	4,6-Dinitro-2-methylphenol	4-Bromophenyl-phenylether	4-Chloro-3-methylphenol	4-Chloroaniline	4-Chlorophenyl-phenylether	4-Methylphenol	4-Nitroaniline	4-Nitrophenol	Acenaphrnene

	Units	
FIELDQC A1566 0 - 0	OFR	
L	Result	
U	Units	
FIELDQC A1560 0 - 0	r oFR	
	Result	
	Units	7-5-2 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
FIELDOC A1554 0 - 0	OFR	¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬
<u>.</u> 32	Result	\$
	Units	
FIELDOC A1553 0 - 0	OFR	
L	Result	
۵	Units	× × 7 ≥ 6 C
2-658 A1604-MSD 0 - 0	QFR	
	Resul t	\$8 26
Well/Boring: Sample ID: Depth:		ai ne ene
	Parameters	Acenaphthylene Anthracene Benzo(a) anthracene Benzo(a) pyrene Benzo(b) fluoranthene Benzo(f) fluoranthene Di-n-octylphthalate Iluoranthene Hexachlorobenzene Hexachlorochane Indeno(1,2,3-cd)pyrene

Analytical QC results at the FTA for WQ Tinker Air Force Base

	Units	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
FIELDOC A1566 0 - 0	QFR	בבבבב בבבבב
E	Result	\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$
	Units	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
FIELDQC A1560 0 - 0	OFR	22222 22222
I.F.	Result	\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$\$
	Units	ng/l ng/l ng/l ng/l ng/l ng/l ng/l ng/l
FIELDOC A1554 0 - 0	o FR	ככככככ כככככ כ כככ
L -	Result	\$
	Units	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n
FIELDOC A1553 0 - 0	QFR.	22222 22222
_	Result	\$
	Units	Xrec Xrec Xrec Xrec Xrec Xrec Xrec Xrec
2-65B A1604-MSD 0 - 0	QFR	
A 1	Result	76 78 86 86 87 87 87 87 88 88 89 89 89
Well/Boring: Sample ID: Depth:		oxy)methane yloather pyloather tyoyl)ethe Solids Solids witrogen arbon Solids ethane ethane ene ene ane ane ane ane ane ane ane
	Parameters	PHENOL-D5 Pentachlorophenol Phenanthrene Phenol Pis(2-Chloroethyl)ethe Dis(2-Chlorostopyl)ethe Dis(2-Chlorostopyl)ethe Dis(2-Chlorostopyl)ethe Dis(2-Chlorostopyl)ethe Dis(2-Chlorostopyl)ethe Dis(2-Chloroethane Total Dissolved Solids Total Suspended Solids Total Trichloroethane T, 1, 2-Trichloroethane T, 2-Dichloroethane T,

	Well/Boring: Sample ID: Depth:	A16	2-65B A1604-MSD 0 - 0		H 40	TELDOC A1553 0 - 0		Ξ 🕶	FIELDQC A1554 0 - 0		I KO	TELDOC A1560 0 - 0		F.	*IELDQC A1566 0 - 0	
Parameters		Result	QFR	Units	Result	QFR	Units	Result	QFR	Units	Result	A PR	Units	Result	QFR	Units
	s e Serie	% % % % % % % % % % % % % % % % % % %		X X X X X X X X X Y Y Y Y Y Y Y Y Y Y Y	%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%%		% Lec 1 / 6n 1 / 6n	50000000000000000000000000000000000000		7 PEC 1	50000000000000000000000000000000000000	222222222222222222	%rec ug/1	\$&\$&\$&\$&\$\$		%rec ng/1 ng/1 ng/1 ng/1 ng/1 ng/1 ng/1 ng/1 ng/1 ng/1 ng/1 ng/1 ng/1 ng/1 ng/1 ng/1 ng/1 ng/1
trans-1,2-Dichloroethene	ene				ŵ	-	ng/l	ئ	>	1/gn	ث	>	1/6n	.₽) =	1/6n

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for
that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
OFR = Qualifier
Analytical data has not been validated.

FIELDQC FIELDQC A1606 0 - 0	Result QFR Units Result QFR Units	Se
	Units	1/6n 1/6n 1/6u 1/6u 1/6u 1/6u 1/6u 1/6u 1/6u 1/6u
FIELDQC A1605 0 - 0	Q F.R	¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬¬
L 7.	Result	450 450 450 450 450 450 450 450
	Units	
FIELDQC A1599 0 - 0	QFR	
I.A.	Result	
Well/Boring: Sample ID: Depth:	Parameters	Alkalinity, Titrimetric Chemical Oxygen Demand Chloride by Ion Chrom. Nitrate and Nitrite Phenolics Silica Sulfate by Ion Chrom. Total Phosphorus Aluminum Arsenic - Graphite Furnace Barium Baryllium Catcium Chromium Selenium Selenium Silver Sodium Cit. 2,4-Trichlorobenzene 1,2-Dichlorobenzene

DQC FIELDQC 06 A1666 0 0 - 0	QFR Units Result QFR Units																								
FIELDQC A1606 0 - 0	Result																								
	Units	1/gu 1/gu	y ec	1/6n 1/6n	J/gn	1/6n	J/Bn	1/6n	%rec	%rec		1/00)/gn	1/gn	1/gn) Bn) fin	7) / Bil	2) Bn) Bn	1/gn	l/gn)/gn
FIELDOC A1605 0 - 0	OFR	ככ	:	- -	> :	>	>=	> =)			=) =	>	>	> :	> :	> =	> =) =	>	⊃	>	> :	>
E 40	Result	<10 <10 53	y :	\$ \$	10 10 10 10 10 10 10 10 10 10 10 10 10 1	9 0	5 7 7 0 7 7	200	2,72	11		×10	1 0	4 25	,	5 5 6	\$ {	35	200	,	1 0	0 5	<10 1	\$ 25	1 0
	Units																								
FIELDQC A1599 0 - 0	OFR																								
I	Resul t																								
Well/Boring: Sample ID: Depth:		ne enol	Jor Jor	enol 		a s	w 9	פֿ				<u>ə</u>			•	laine	lonoda lyn	y pieno.	henol		enyl ether				
	Parameters	1,4-Dichlorobenzene 2,4,5-Trichlorophenol	2,4,6-Tribromophenol	2,4,6-Irichlorophe 2,4-Dichlorophenol	2,4-Dimethylphenol	2,4-Dinitrotoluene	2,6-Dinitrotoluene	2-Chlorophenol	2-FLUOROBIPHENYL	2-FLUOROPHENOL	2-Fluorobiphenyl	2-Methylnaphthalene	2-Methylphenol	2-Nitroaniline	2-Nitrophenol	3,3'-Ulchlorobenzi	2-Nitroaniline 7. 4-Dinitro-2-mothylphonol	4.8 Comphenyl - phenyl ether	4-Chloro-3-methylphenol	4-Chloroaniline	4-Chlorophenyl-phenylether	4-Methylphenol	4-Nitroaniline	4-Nitrophenol	Acenaphthene

	Units		
FIELDOC A1666 0 - 0	QFR		
L	Result		
	Units		
FIELDQC A1606 0 - 0	QFR		
ir -	Result		
	Uni ts	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	i
FIELDOC A1605 0 - 0	QFR.	ככ ככככככככככככככככככככ	
<u>.</u> ~0	Result	\$	
	Units		
FIELDOC A1599 0 - 0	QFR		
	Result		
Well/Boring: Sample ID: Depth:	Parameters	Acenaphthylene Anthracene Benzo(a)authracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(b)fluoranthene Benzo(c)fluoranthene Benzo(c)fluoranthene Benzo(c)fluoranthene Benzo(c)fluoranthene Benzo(c)fluoranthene Benzo(c)fluoranthene Dibenzo(a)h)anthracene Dibenzo(a,h)anthracene Dibenzo(a,h)anthracene Dibenzo(u,an) Diethylphthalate Fluoranthene Fluoranthene Hexachlorobutadiene Hexachlorobutadiene Hexachlorocethane Indeno(1,2,3-cd)pyrene Indeno(1,2,3-cd)pyrene Indeno(1,2,3-cd)pyrene Indeno(1,2,1-od)pyrene	ene-05
	Para	Acenaphthylene Anthracene Benzo(a) anthracene Benzo(b) fluoranth Benzo(b) fluoranth Benzo(b) fluoranth Benzo(c) fluoranth Benzo(c) fluoranth Benzo(c) fluoranth Benzo(c) fluoranth Benzo(c) fluoranth Benzo(c) fluoranth Di-n-butylphthala Di-n-butylp	Nitrobenzene-05

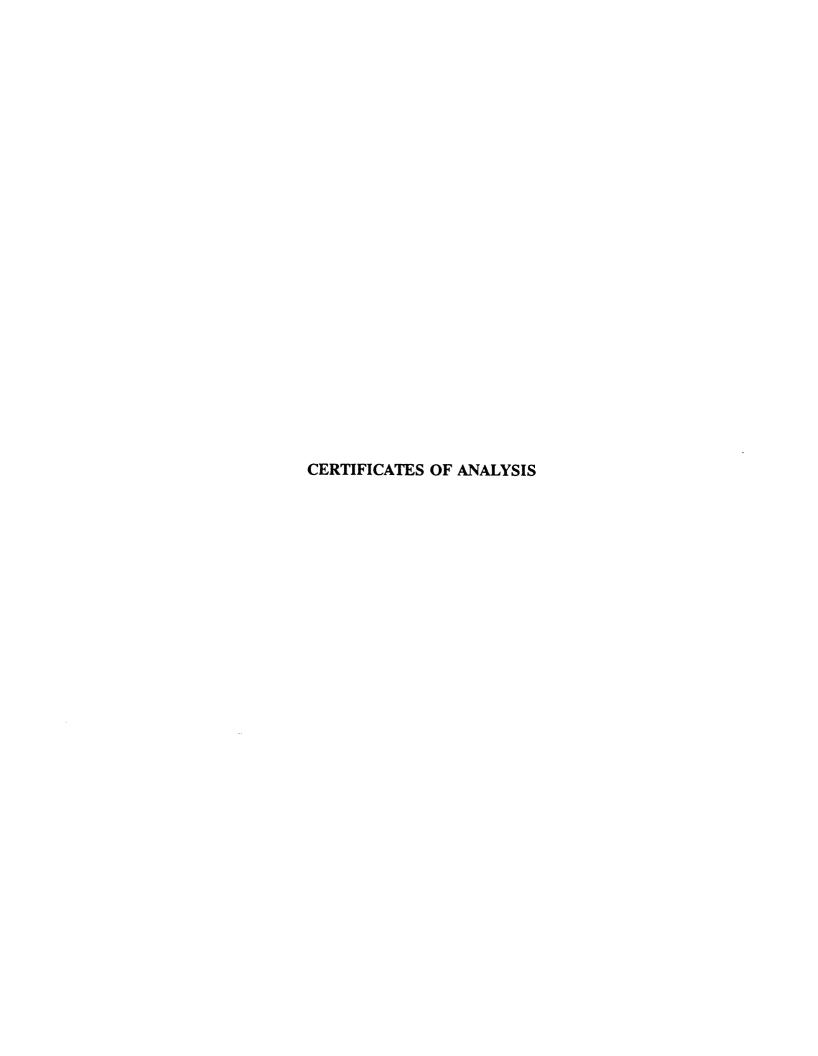
B = Analyte was also found in sample blank
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N = Sample is outside of Matrix Spike QC limit
< = Not detected
QFR = Qualifier
Analytical data has not been validated.

Well/8 samp	Well/Boring: Sample ID: Depth:	E	FIELDQC A1599 0 - 0		L	TELDOC A1605 0 - 0			FIELDOC A1606 0 - 0		<u> </u>	FIELDQC A1666 0 - 0	
Parameters		Result	QFR.	Units	Result	OFR	Units	Result	OFR	Units	Result	OFR	Units
PHENOL-D5 Pentachlorophenol Phenanthrene Phenol Phenol Phenol Phenol Pyrene IERPHENYL-D14 bis(2-Chloroethoxy)methane bis(2-Chloroethoxy)methane bis(2-Chloroethoxy)methane bis(2-Chloroethoxy)methane bis(2-Chloroethoxy)methane bis(2-Chloroethoxy)methane bis(2-Chloroethoxy)methane bis(2-Chloroethoxy)methane lotal Dissolved Solids Total Dissolved Solids Iotal Carbon Total Organic Carbon Iotal Dissolved Solids I, 1, 1-Trichloroethane I, 1, 2, 2-Tetrachloroethane I, 1, 2, 2-Tetrachloroethane I, 1, 2, 2-Tetrachloroethane I, 1, 2, 2-Tetrachloroethane I, 2-Dichloroethane I, 2-Dichloroetha		\$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$ \$	כרככככ כככככ	ng/l ng/l ng/l ng/l ng/l ng/l ng/l ng/l	86.000		1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	\$	22222 22222	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n	\$	22222 22222	1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n 1/6n

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for
that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
< = Not detected
GFR = Qualifier
Analytical data has not been validated.</pre>

		822222222222222 8222222222222222222222
	Units	1 / 6n 1
TELDOC A1666 0 - 0	QFR	
L	Result	్లాలు జాలు జాలు జాలు జాలు జాలు జాలు జాలు
	Units	
TELDQC A1606 0 - 0	QFR.	222272222222 222222
u.	Result	505000;50500500805500000
	Units	
: TELDQC A1605 0 - 0	QFR	
<u>.</u>	Result	%&&&&&&&&&&&&&&&
	Units	% Lec 08/11/60 08/11/60 08/11/60 08/11/60 08/11/60 08/11/60 08/11/60 08/11/60
IELDQC 11599) - 0	QFR	
<u>.</u> ~0	Resul t	% &\$\$&\$
Well/Boring: Sample ID: Depth:		ene Te
	Parameters	Bromofluorobenzene Bromoform Bromomethane Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chloroethane Chloroethane Chloromethane Chloromethane Ethylbenzene Ethylbenzene Methylene Chloride Styrene Tetrachloroethene Toluene Vinyl Acetate Vinyl Acetate Vinyl Chloride Xylenes (total) cis 1,3 Dichloropropene cis-1,2-Dichloroethene trans 1,3-Dichloroethene

B = Analyte was also found in sample blank
E = Concentration exceeds instrument calibration range for
that specific analysis
J = Concentration is an estimated value
N = Sample is outside of Matrix Spike QC limit
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Analytical data has not been validated.





ANALYTICAL Pouted to KH, TL, SERVICES 12/20/93

CERTIFICATE OF ANALYSIS

IT CORPORATION 1250 CAPITAL OF TX HWY BLDG. 3, SUITE 200 AUSTIN, TX 78746-6443 TIM JENNINGS

Date: 12/17/93

Work Order: B3-11-191

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O.5001 Date Received: 11/16/93 Number of Samples: 13 Sample Type: SOIL

409832-003-01

I. Introduction

Samples were labeled as follows:

LABORATORY #
B3-11-191-01
B3-11-191-02
B3-11-191-03
B3-11-191-04
B3-11-191-05
B3-11-191-06
B3-11-191-07
B3-11-191-08
B3-11-191-09
B3-11-191-10
B3-11-191-11
B3-11-191-12
B3-11-191-13

Reviewed and Approved:

Jon Bartell

Laboratory Director

Page: 2 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 W

Work Order: B3-11-191

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Page: 3 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-11-191

SAMPLE ID: A1540

SAMPLE DATE: 11/15/93 10:52:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.49U	0.49	MG/KG	11/23/93	EPA7196

Page: 4 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1540

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/29/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

			Report	ing				Re	porting
	Result	Qual	Limi	.t		Result	Qua	1	Limit
Chloromethane	:	10	บ 1	.0	1,2-Dichloropropane		5	U	5
Bromomethane		LO	บ 1	.0	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride		.0	U 1	.0	Trichloroethene		5	U	5
Chloroethane	1	LO	บ 1	.0	Chlorodibromomethane		5	U	5
Methylene chloride	5.	6 J	в 1	.0	1,1,2-Trichloroethane		5	U	5
Acetone	5.	4 J	B 10	0	Benzene		5	U	5
Carbon disulfide		5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5	ט	5	2-Chloroethylvinyl ether		10	U	10
-Dichloroethane		5	บ	5	Bromoform		5	U	5
.us-1,2-Dichloroethene		5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene		5	U	5	4-Methyl-2-pentanone	1	50	U	50
Chloroform		5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	4.	4	J 10	0	Toluene		5	U	5
1,1,1-Trichloroethane	1.	1 B	J	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	1	.0	U 1	.0	Styrene		5	บ	5
Dichlorobromomethane		5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	102	74 - 121
1,2-DICHLOROETHANE-D4	107	70 - 120

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 5 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1540
SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/27/93
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			I	Reportin
•	esult		Limit		Result		_
		-				-	
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	υ	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	υ	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	υ	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	σ	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	υ	0.330	Diethylphthalate	0.330	U	0.330
<pre>' (2-Chloroisopropyl)ether</pre>	0.330	υ	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
≥thylphenol	0.330	U	0.330	Fluorene	0.330	ប	0.330
N-Nitroso-di-n-propylamine	0.330	υ	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	υ	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	υ	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	σ	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	υ	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	σ	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	υ	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	υ	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	υ	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	υ	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	υ	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	υ	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	υ	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	υ	0.330	Di-n-octylphthalate	0.330	บ	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b) fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	บ	0.330
				Benzo(g,h,i)perylene	0.330	Ŭ	0.330

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1540 SAMPLE DATE: 11/15/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	77	23 - 120
2-Fluorobiphenyl	94	30 - 115
Terphenyl-D14	79	18 - 137
Phenol-D5	75	24 - 113
2-Fluorophenol	65	25 - 121
2,4,6-Tribromophenol	79	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 7 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work order: B3-11-191

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1540

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 85.4700

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.8		0.86	7060	12/06/93
Aluminum	8400	N	17	6010	12/05/93
Barium	150	N	17	6010	12/05/93
Beryllium	1.1		0.43	6010	12/05/93
Cadmium	0.74		0.43	6010	12/05/93
Chromium	9.4		0.85	6010	12/05/93
Copper	5.2		2.1	6010	12/05/93
Iron	10000	N	8.5	6010	12/05/93
Nickel	12	*	3.4	6010	12/05/93
Lead	8.8	N	1.0	7421	12/06/93
Mercury	0.025	U	0.025	7471	12/03/93
Silver	0.85	U	0.85	6010	12/05/93
Zinc	12		1.7	6010	12/05/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Duplicate analysis outside control limits due to matrix interference on nickel analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

Page: 8 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

SAMPLE ID: A1540-MS

SAMPLE DATE: 11/15/93 10:52:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	<u>Limit</u>	Units	Analyzed	Reference
Chromium VI		92		% REC	11/23/93	EPA7196

Page: 9 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1540-MS
SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/24/93
DILUTION FACTOR: 1.0

UNITS: % REC

Result			Result
1,1-Dichloroethene	95	Trichloroethene	85
		Benzene	104
		Toluene	105
		Chlorobenzene	107

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	93	74 - 121
1,2-DICHLOROETHANE-D4	105	70 - 120

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 10 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1540-MS
SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/27/93
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 0.033

UNITS: % REC

Result Result Phenol 76 Acenaphthene 56 2-Chlorophenol 98 77 4-Nitrophenol 1,4-Dichlorobenzene 40 2,4-Dinitrotoluene 40 N-Nitroso-di-n-propylamine 52 Pentachlorophenol 80 1,2,4-Trichlorobenzene 46 45 Pyrene 4-Chloro-3-methylphenol 97

Surrogates	% Recovery	Limits
Nitrobenzene-D5	90	23 - 120
2-Fluorobiphenyl	101	30 - 115
Terphenyl-D14	80	18 - 137
Phenol-D5	81	24 - 113
2-Fluorophenol	75	25 - 121
2,4,6-Tribromophenol	83	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 11 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1540-MS
SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 116.279

UNITS: % REC

 	·		
 	Result	Method Reference	Analysis Date
Arsenic	116	7060	12/06/93
Aluminum	1296	6010	12/05/93
Barium	338	6010	12/05/93
Beryllium	87	6010	12/05/93
Cadmium	82	6010	12/05/93
Chromium	95	6010	12/05/93
Copper	87	6010	12/05/93
Iron	789	6010	12/05/93
Nickel	86	6010	12/05/93
Lead	190	7421	12/06/93
Mercury	110	7471	12/03/93
Silver	82	6010	12/05/93
Zinc	92	6010	12/05/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

% RPD for matrix spikes outside control limits due to matrix interference on barium analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

Page: 12 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

SAMPLE ID: A1540-MSD

SAMPLE DATE: 11/15/93 10:52:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		92		% REC	11/23/93	EPA7196

Page: 13 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work

Work Order: B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1540-MSD
SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/24/93

DILUTION FACTOR: 1.0

UNITS: % REC

	Result		
1,1-Dichloroethene	94	Trichloroethene	87
		Benzene	105
		Toluene	108
		Chlorobenzene	108

Surrogates	% Recovery	Limits			
TOLUENE-D8	108	81 - 117			
BROMOFLUOROBENZENE	92	74 - 121			
1,2-DICHLOROETHANE-D4	107	70 - 120			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

Regult

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

Regult

METHOD REFERENCE: EPA8270

SAMPLE ID: A1540-MSD SAMPLE DATE: 11/15/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/27/93
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 0.033

UNITS: % REC

2.0		Nebure	
Phenol	69	Acenaphthene	49
2-Chlorophenol	76	4-Nitrophenol	56
1,4-Dichlorobenzene	29	2,4-Dinitrotoluene	36
N-Nitroso-di-n-propylamine	39	Pentachlorophenol	63
1,2,4-Trichlorobenzene	34	Pyrene	43
4-Chloro-3-methylphenol	79		

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	68	23 - 120			
2-Fluorobiphenyl	85	30 - 115			
Terphenyl-D14	76	18 - 137			
Phenol-D5	70	24 - 113			
2-Fluorophenol	63	25 - 121			
2,4,6-Tribromophenol	73	19 - 122			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 15 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1540-MSD SAMPLE DATE: 11/15/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 86.2068

UNITS: % REC

	Result	Method Reference	Analysis Date
Arsenic	117	7060	12/06/93
Aluminum	1122	6010	12/05/93
Barium	124	6010	12/05/93
Beryllium	87	6010	12/05/93
Cadmium	82	6010	12/05/93
Chromium	94	6010	12/05/93
Copper	87	6010	12/05/93
Iron	688	6010	12/05/93
Nickel	83	6010	12/05/93
Lead	256	7421	12/06/93
Mercury	120	7471	12/03/93
Silver	82	6010	12/05/93
Zinc	90	6010	12/05/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike duplicate outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

% RPD for matrix spikes outside control limits due to matrix interference on barium analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable. Page: 16 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

(512) 892-6684 409832-003-01 Work Order: B3-11-191

SAMPLE ID: A1541

SAMPLE DATE: 11/15/93 11:00:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.510	0.51	MG/KG	11/23/93	EPA7196

Page: 17 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1541
SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

ANALYSIS DATE: 11/29/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		1	Reporting				Report	ing
	Result	Qual	Limit		Result	Qual	Limi	Lt
Chloromethane	1	.0 1	J 10	1,2-Dichloropropane		5	U	5
Bromomethane	1	.0 1	J 10	trans-1,3-Dichloropropene		5	บ	5
Vinyl chloride	1	.0 1	J 10	Trichloroethene		5	U	5
Chloroethane	1	.0 1	J 10	Chlorodibromomethane		5	U	5
Methylene chloride	6.	8 J	3 10	1,1,2-Trichloroethane		5	U	5
Acetone	8.	7 J	3 100	Benzene		5	บ	5
Carbon disulfide		5 1	J 5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 1	J 5	2-Chloroethylvinyl ether		10	U 1	LO
1 '-Dichloroethane		5	J 5	Bromoform		5	ប	5
s-1,2-Dichloroethene		5 1	J 5	2-Hexanone		50	U 5	50
cis-1,2-Dichloroethene		5 1	J 5	4-Methyl-2-pentanone		50	U 5	50
Chloroform		5 1	J 5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 1	J 5	1,1,2,2-Tetrachloroethane		5	ប	5
2-Butanone	3.	5 .	100	Toluene		5	U	5
1,1,1-Trichloroethane		5	J 5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	J 5	Ethylbenzene		5	U	5
Vinyl acetate	1	.0 1	J 10	Styrene		5	U	5
Dichlorobromomethane		5	J 5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	102	74 - 121
1,2-DICHLOROETHANE-D4	110	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 18 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX
(512) 802-6684

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1541
SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/27/93
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 0.033

UNITS: MG/KG	.033	Re	porting			Ţ	Reportin
· · · · · · · · · · · · · · · · · · ·	sult (Limit		Result		Limit
	,					*	
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
'' (2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
≥thylphenol	0.330	บ	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	บ	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	บ	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	บ	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	บ	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1541
SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	78	23 - 120
2-Fluorobiphenyl	96	30 - 115
Terphenyl-D14	7 7	18 - 137
Phenol-D5	74	24 - 113
2-Fluorophenol	66	25 - 121
2,4,6-Tribromophenol	76	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 20 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1541

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 91.7431

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	3.3		0.92	7060	12/06/93
Aluminum	5900	N	18	6010	12/05/93
Barium	69	N	18	6010	12/05/93
Beryllium	0.88		0.46	6010	12/05/93
Cadmium	0.46	U	0.46	6010	12/05/93
Chromium	8.2		0.92	6010	12/05/93
Copper	5.5		2.3	6010	12/05/93
Iron	7200	N	9.2	6010	12/05/93
Nickel	12	*	3.7	6010	12/05/93
Lead	5.5	N	0.28	7421	12/06/93
Mercury	0.020	Ū	0.020	7471	12/03/93
Silver	0.92	Ü	0.92	6010	12/05/93
Zinc	15		1.8	6010	12/05/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01

(512) 892-6684 Work Order: B3-11-191

SAMPLE ID: A1542

SAMPLE DATE: 11/15/93 11:24:00

SAMPLE MATRIX: SOIL

	Note		Reporting Date			
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference
Chromium VI		0.500	0.50	MG/KG	11/23/93	EPA7196

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1542

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

ANALYSIS DATE: 11/29/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	porting
	Result Q	ual	Limit		Result	Qua:	1	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	6.8	JB	10	1,1,2-Trichloroethane		5	U	5
Acetone	9.1	JB	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
<pre>1 `-Dichloroethane</pre>	5	U	5	Bromoform		5	U	5
us-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	Ü	5	Xvlenes, total		5	U	5

Surrogates		Recovery	L	Lmi	ts
TOLUENE-D8		103	81	_	117
BROMOFLUOROBENZENE		100	74	-	121
1.2-DICHLOROETHANE-D4		110	70	_	120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1542 SAMPLE DATE: 11/15/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/27/93
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 0.033

UNITS: MG/KG	0.033						
110/110	Result		porting		_		Reportin
r	Kesuit	Quar	Limit		Result	Qual	Limit
Phenol	0.330	υ (0.330	2,6-Dinitrotoluene	0.330) [[0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.825		0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825	_	0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.825		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	_	0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.330		0.330
hiq(2-Chloroisopropyl)ether	0.330	ט י	0.330	4-Chlorophenyl-phenylether			0.330
<pre>≥thylphenol</pre>	0.330		0.330	Fluorene	0.330	_	0.330
N-Nitroso-di-n-propylamine	0.330		0.330	4-Nitroaniline	0.825		0.825
Hexachloroethane	0.330		0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.330		0.330	N-Nitrosodiphenylamine (1)		_	0.330
Isophorone	0.330		0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	_	0.330
2,4-Dimethylphenol	0.330	υ	0.330	Pentachlorophenol	0.825	-	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	_	0.330
2,4-Dichlorophenol	0.330	υ	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	υ	0.330	Fluoranthene	0.330	_	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	_	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	_	0.330
Hexachlorocyclopentadiene	0.330	บ	0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330	บ	0.330	Di-n-octylphthalate	0.330	_	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825	ั บ	0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330	Ū	0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330		0.330
				- · · •			

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1542

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	69	23 - 120
2-Fluorobiphenyl	90	30 - 115
Terphenyl-D14	74	18 - 137
Phenol-D5	73	24 - 113
2-Fluorophenol	64	25 - 121
2,4,6-Tribromophenol	71	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1542

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 109.890

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.2		1.1	7060	12/06/93
Aluminum	19000	N	22	6010	12/05/93
Barium	27	N	22	6010	12/05/93
Beryllium	2.0		0.55	6010	12/05/93
Cadmium	0.55	υ	0.55	6010	12/05/93
Chromium	24		1.1	6010	12/05/93
Copper	22		2.7	6010	12/05/93
Iron	16000	N	11	6010	12/05/93
Nickel	26	*	4.4	6010	12/05/93
Lead	3.5	N	0.33	7421	12/06/93
Mercury	0.023	บ	0.023	7471	12/03/93
Silver	1.1	U	1.1	6010	12/05/93
Zinc	35		2.2	6010	12/05/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA < 0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

SAMPLE ID: A1543

SAMPLE DATE: 11/15/93 11:38:00

SAMPLE MATRIX: SOIL

	Note		Reporting	Date	Method	
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	11/23/93	EPA7196

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1543

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/29/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		1	Reporting	J			Re	porting
	Result	Qual	Limit		Result	Qua.	L	Limit
Chloromethane	1	.0 1	J 10	1,2-Dichloropropane		5	บ	5
Bromomethane	1	.0.	J 10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	.0 1	J 10	Trichloroethene		5	U	5
Chloroethane	1	.0 1	J 10	Chlorodibromomethane		5	U	5
Methylene chloride	3.	3 J	3 10	1,1,2-Trichloroethane		5	U	5
Acetone	5.	7 JI	3 100	Benzene		5	U	5
Carbon disulfide		5 τ	J 5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 τ	J 5	2-Chloroethylvinyl ether		LO	U	10
1 '-Dichloroethane		5 t	J 5	Bromoform		5	U	5
.s-1,2-Dichloroethene		5 τ	J 5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5 t	J 5	4-Methyl-2-pentanone	9	50	U	50
Chloroform		5 τ	J 5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 t	J 5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	0 τ	J 100	Toluene		5	U	5
1,1,1-Trichloroethane		5 τ	J 5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 t	J 5	Ethylbenzene		5	U	5
Vinyl acetate	1	.Ο τ	J 10	Styrene		5	U	5
Dichlorobromomethane		5 t	J 5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	104	81 - 117
BROMOFLUOROBENZENE	101	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1543 SAMPLE DATE: 11/15/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/27/93 ANALYSIS DATE: 12/02/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Reportin
R	esult	Qual	Limit		Result	Qual	Limit
			•				
Phenol	0.330	_	0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.825		0.825
2-Chlorophenol	0.330	-	0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330	ט כ	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.825	-	0.825
Benzyl alcohol	0.330	ט כ	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
ליק(2-Chloroisopropyl)ether	0.330	ט כ	0.330	4-Chlorophenyl-phenylether	0.330	ט (0.330
≥thylphenol	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	ט כ	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	ט כ	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	ט ט	0.330
2-Nitrophenol	0.330	ט כ	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	υ (0.330	Pentachlorophenol	0.825	ט	0.825
Benzoic Acid	0.330	ט כ	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	ט כ	0.330	Anthracene	0.330	ט (0.330
2,4-Dichlorophenol	0.330	ט כ	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	ט כ	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	υ (0.330	Butylbenzylphthalate	0.330	ט ט	0.330
Hexachlorobutadiene	0.330	ט כ	0.330	3,3'-Dichlorobenzidine	0.330	ט ט	0.330
4-Chloro-3-methylphenol	0.330	U C	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	ט כ	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	ט כ	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	ט כ	0.330	Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b) fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	υ (0.330	Benzo(k) fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	υ (0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1543 SAMPLE DATE: 11/15/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	61	23 - 120
2-Fluorobiphenyl	81	30 - 115
Terphenyl-D14	65	18 - 137
Phenol-D5	64	24 - 113
2-Fluorophenol	56	25 - 121
2,4,6-Tribromophenol	59	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 30 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order:

Work Order: B3-11-191

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1543
SAMPLE DATE: 11/15/93

SAMPLE DATE: 11/15/9: SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 92.5925

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
Arsenic	4.1		0.93	7060	12/06/93	-
Aluminum	6300	N	19	6010	12/05/93	
Barium	32	N	19	6010	12/05/93	
Beryllium	1.0		0.46	6010	12/05/93	
Cadmium	0.46	U	0.46	6010	12/05/93	
Chromium	11		0.93	6010	12/05/93	
Copper	9.2		2.3	6010	12/05/93	
Iron	11000	N	9.3	6010	12/05/93	
Nickel	13	*	3.7	6010	12/05/93	
Lead	9.1	N	1.1	7421	12/06/93	
Mercury	0.024	U	0.024	7471	12/03/93	
Silver	0.93	U	0.93	6010	12/05/93	
Zinc	17		1.9	6010	12/05/93	
					• •	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

SAMPLE ID: A1544

SAMPLE DATE: 11/15/93 12:25:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	_ Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	11/23/93	EPA7196

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1544

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/29/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Repo	rting
	Result Qu	al	Limit		Result	Qual	. Li	nit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	บ	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	บ	10	Chlorodibromomethane		5	U	5
Methylene chloride	2.8	JB	10	1,1,2-Trichloroethane		5	U	5
Acetone	7.6	JB	100	Benzene		5	U	5
Carbon disulfide	5	บ	5	cis-1,3-Dichloropropene		5	υ	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1 1-Dichloroethane	5	U	5	Bromoform		5	U	5
s-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	2.8	J	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	101	74 - 121
1,2-DICHLOROETHANE-D4	111	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 33 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1544
SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/27/93
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 0.033

UNITS: MG/KG	7.033	Re	eporting			1	Reportin
/	esult O		Limit		Result		
200	Surr y		DIMI C		NCD410	¥	
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	บ	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	U	0.330
r (2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
<pre>thylphenol</pre>	0.330	U	0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	บ	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b) fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1544

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	62	23 - 120
2-Fluorobiphenyl	79	30 - 115
Terphenyl-D14	64	18 - 137
Phenol-D5	62	24 - 113
2-Fluorophenol	55	25 - 121
2,4,6-Tribromophenol	56	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 35 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1544

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 98.0392

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
Arsenic	2.5		0.98	7060	12/06/93	
Aluminum	9000	N	20	6010	12/05/93	
Barium	54	N	20	6010	12/05/93	
Beryllium	1.9		0.49	6010	12/05/93	
Cadmium	1.1		0.49	6010	12/05/93	
Chromium	37		0.98	6010	12/05/93	
Copper	11		2.5	6010	12/05/93	
Iron	22000	N	9.8	6010	12/05/93	
Nickel	22	*	3.9	6010	12/05/93	
Lead	5.7	N	0.29	7421	12/06/93	
Mercury	0.024	Ŭ	0.024	7471	12/03/93	
Silver	0.98	ប	0.98	6010	12/05/93	
Zinc	26		2.0	6010	12/05/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684 409832-003-01 Work Order: B3-11-191

SAMPLE ID: A1545

SAMPLE DATE: 11/15/93 16:10:00

SAMPLE MATRIX: SOIL

	Note		Reporting	Date Method	
Test Name	Ref	Result	Limit	Units	Analyzed Reference
Chromium VI		0.51U	0.51	MG/KG	11/23/93 EPA7196

Page: 37 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1545

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/29/93

DILUTION FACTOR: 1.0

UNITS: UG/KG

		Re	eporting				Reporting
	Result Qua	al	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	υ 5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	ບ 5
Vinyl chloride	10	U	10	Trichloroethene		5	บ 5
Chloroethane	10	U	10	Chlorodibromomethane		5	ប 5
Methylene chloride	1.3	JB	10	1,1,2-Trichloroethane		5	บ 5
Acetone	6.7	JB	100	Benzene		5	υ 5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	บ 5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	•	10	U 10
' -Dichloroethane	5	U	5	Bromoform		5	U 5
.is-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	ប 50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	υ 5 0
Chloroform	5	U	5	Tetrachloroethene		5	ບ 5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	υ 5
2-Butanone	5.1	J	100	Toluene		5	U 5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U 5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	υ 5
Vinyl acetate	10	U	10	Styrene		5	บ 5
Dichlorobromomethane	5	Ŭ	5	Xylenes, total		5	υ 5

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	104	74 - 121
1,2-DICHLOROETHANE-D4	107	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 38 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1545 SAMPLE DATE: 11/15/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/27/93
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			I	Reportin
Re	sult	Qual	Limit		Result	Qual	Limit
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.33	-	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82	_	0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.33	-	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.82		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.33		0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.33	-	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.33	_	0.330
۲ ع(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.33	-	0.330
ethylphenol	0.330	U	0.330	Fluorene	0.33	ט כ	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.82	5 U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.82	5 U	0.825
Nitrobenzene	0.330	υ	0.330	N-Nitrosodiphenylamine (1)	0.33	ט כ	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.33	ט כ	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.33	ט כ	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.82	5 U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.33	ט כ	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.33	ט כ	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.33	U C	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.33	U C	0.330
Naphthalene	0.330	U (0.330	Pyrene	0.33	U C	0.330
4-Chloroaniline	0.330	U (0.330	Butylbenzylphthalate	0.33	ט כ	0.330
Hexachlorobutadiene	0.330	U (0.330	3,3'-Dichlorobenzidine	0.33	U C	0.330
4-Chloro-3-methylphenol	0.330	U (0.330	Benzo(a)anthracene	0.33	U C	0.330
2-Methylnaphthalene	0.330	U (0.330	Chrysene	0.33	U C	0.330
Hexachlorocyclopentadiene	0.330	ט (0.330	bis(2-Ethylhexyl)phthalate	0.0	7 J	0.330
2,4,6-Trichlorophenol	0.330	ט (0.330	Di-n-octylphthalate	0.33	υ 0	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.33	ט כ	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.33	ט כ	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.33	ט כ	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.33	υ 0	0.330
Acenaphthylene	0.330	U (0.330	Dibenzo(a,h)anthracene	0.33	υ σ	0.330
-				Benzo(g,h,i)perylene	0.33	υ c	0.330
				• • • •			

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 802-6684: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1545

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	81	23 - 120				
2-Fluorobiphenyl	99	30 - 115				
Terphenyl-D14	77	18 - 137				
Phenol-D5	78	24 - 113				
2-Fluorophenol	66	25 - 121				
2,4,6-Tribromophenol	72	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 40 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-11-191

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1545

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 108.695

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.1	ט	1.1	7060	12/06/93
Aluminum	2300	N	22	6010	12/05/93
Barium	22	UN	22	6010	12/05/93
Beryllium	0.54	U	0.54	6010	12/05/93
Cadmium	0.54	U	0.54	6010	12/05/93
Chromium	8.8		1.1	6010	12/05/93
Copper	2.7	ប	2.7	6010	12/05/93
Iron	6100	N	11	6010	12/05/93
Nickel	7.9	*	4.3	6010	12/05/93
Lead	3.1	N	0.33	7421	12/06/93
Mercury	0.024	บ	0.024	7471	12/03/93
Silver	1.1	U	1.1	6010	12/05/93
Zinc	7.8		2.2	6010	12/05/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-11-191

SAMPLE ID: A1546

SAMPLE DATE: 11/15/93 16:25:00

SAMPLE MATRIX: SOIL

	Note		Reporting	Date	Method	
Test Name	Ref	Result	<u>Limit</u>	Units	Analyzed	Reference
Chromium VI		0.510	0.51	MG/KG	11/23/93	EPA7196

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1546

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/29/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	porting
	Result Qu	ıal	Limit		Result	Qua]	L	Limit
Chloromethane	10	ט	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	8.0	JB	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		LO	U	10
J '-Dichloroethane	5	U	5	Bromoform		5	U	5
is-1,2-Dichloroethene	5	U	5	2-Hexanone	,	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	•	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	2.4	J	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	102	81 - 117				
BROMOFLUOROBENZENE	103	74 - 121				
1,2-DICHLOROETHANE-D4	112	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 43 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1546
SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/27/93
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Reportin
	Result	Qual	Limit		Result	Qual	Limit
Phone							
Phenol	0.330	-	0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.825	_	0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825		0.825
1,4-Dichlorobenzene	0.330	_	0.330	4-Nitrophenol	0.825		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330	_	0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330		0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.330		0.330
h'~(2-Chloroisopropyl)ethe	er 0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
thylphenol	0.330		0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	ប	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	ט י	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	Ū	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	υ	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	υ	0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b)fluoranthene	0.330	υ	0.330
2-Chloronaphthalene	0.330		0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825		0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1546
SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits					
Nitrobenzene-D5	81	23 - 120					
2-Fluorobiphenyl	94	30 - 115					
Terphenyl-D14	77	18 - 137					
Phenol-D5	76	24 - 113					
2-Fluorophenol	65	25 - 121					
2,4,6-Tribromophenol	77	19 - 122					

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 45 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1546

SAMPLE DATE: 11/15/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 111.111

UNITS: MG/KG

 	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.3		1.1	7060	12/06/93
Aluminum	1500	N	22	6010	12/05/93
Barium	22	UN	22	6010	12/05/93
Beryllium	0.56	U	0.56	6010	12/05/93
Cadmium	0.56	U	0.56	6010	12/05/93
Chromium	6.7		1.1	6010	12/05/93
Copper	2.8	U	2.8	6010	12/05/93
Iron	4600	N	11	6010	12/05/93
Nickel	6.0	*	4.4	6010	12/05/93
Lead	2.9	N	0.33	7421	12/06/93
Mercury	0.022	U	0.022	7471	12/03/93
Silver	1.1	U	1.1	6010	12/05/93
Zinc	5.9		2.2	6010	12/05/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1547 SAMPLE DATE: 10/20/93 SAMPLE MATRIX: WATER ANALYSIS DATE: 11/22/93 DILUTION FACTOR: 1.0

UNITS: UG/L

		1	Report	ing				Re	porting
	Result	Qual	Limi	.t		Result	Qual		Limit
Chloromethane		10 1	J 1	.0	1,2-Dichloropropane		5	U	5
Bromomethane		10 t	J 1	.0	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride		10 1	ז 1	.0	Trichloroethene		5	U	5
Chloroethane		10 t	J 1	.0	Chlorodibromomethane	3.	4	J	5
Methylene chloride		10 1	J 1	.0	1,1,2-Trichloroethane		5	U	5
Acetone	10	7 OC	J 10	0	Benzene		5	U	5
Carbon disulfide		5 1	J	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 1	J	5	2-Chloroethylvinyl ether	1	.0	U	10
<pre>1 '-Dichloroethane</pre>		5 1	J	5	Bromoform		5	U	5
s-1,2-Dichloroethene		5 1	J	5	2-Hexanone	5	0	U	50
cis-1,2-Dichloroethene		5 t	J	5	4-Methyl-2-pentanone	5	0	U	50
Chloroform		5 (J	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 (J	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	00 t	J 10	0	Toluene		5	U	5
1,1,1-Trichloroethane		5 (J	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 (J	5	Ethylbenzene		5	U	5
Vinyl acetate		10 (J 1	.0	Styrene		5	U	5
Dichlorobromomethane		5 t	J	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	96	88 - 110
BROMOFLUOROBENZENE	92	86 - 115
1,2-DICHLOROETHANE-D4	102	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-11-191

SAMPLE ID: LAB BLANK

SAMPLE DATE:

SAMPLE MATRIX: SOIL

	Note	Reporting		Date	Method		
Test Name	_ Ref	<u>Result</u>	Limit	Units	Analyzed	Reference	
Chromium VI		0.0100	0.010	MG/KG	11/23/93	EPA7196	

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 11/29/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		1	Reporting				Reporting
	Result	Qual	Limit		Result	Qual	Limit
Chloromethane	3	LO 1	J 10	1,2-Dichloropropane		5	Ŭ 5
Bromomethane		LO 1	J 10	trans-1,3-Dichloropropene		5	Ŭ 5
Vinyl chloride		LO 1	J 10	Trichloroethene		5	Ŭ 5
Chloroethane		LO 1	J 10	Chlorodibromomethane		5	υ 5
Methylene chloride	3.	.5	10	1,1,2-Trichloroethane		5	ບ 5
Acetone	5.	. з	190	Benzene		5	υ 5
Carbon disulfide		5 1	J 5	cis-1,3-Dichloropropene		5	ບ 5
1,1-Dichloroethene		5 1	J 5	2-Chloroethylvinyl ether		LO	U 10
1 1-Dichloroethane		5 1	J 5	Bromoform		5	ບ 5
<pre>.1s-1,2-Dichloroethene</pre>		5 1	J 5	2-Hexanone	9	50	ບ 5 0
cis-1,2-Dichloroethene		5 1	J 5	4-Methyl-2-pentanone	5	0	ປ 5 0
Chloroform		5 1	J 5	Tetrachloroethene		5	υ 5
1,2-Dichloroethane		5 1	J 5	1,1,2,2-Tetrachloroethane		5	U 5
2-Butanone	10	00 1	J 100	Toluene		5	υ 5
1,1,1-Trichloroethane	3.	.0	5	Chlorobenzene		5	_ນ 5
Carbon tetrachloride		5 1	J 5	Ethylbenzene		5	บ 5
Vinyl acetate	1	LO 1	J 10	Styrene		5	ບ 5
Dichlorobromomethane		5	J 5	Xylenes, total		5	บ 5

Surrogates	<pre>% Recovery</pre>	Limits			
TOLUENE-D8	102	81 - 117			
BROMOFLUOROBENZENE	100	74 - 121			
1,2-DICHLOROETHANE-D4	105	70 - 120			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK SAMPLE DATE: not spec SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/27/93
ANALYSIS DATE: 12/01/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Repor	rting			F	Reportin
Re	sult Ç	ual Lir	mit		Result	Qual	Limit
Phenol	0.330	υ 0.:		2,6-Dinitrotoluene	0.330	-	0.330
bis(2-Chloroethyl)ether	0.330	υ O.:		3-Nitroaniline	0.825	_	0.825
2-Chlorophenol	0.330	υ O.:		Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330	U 0.		2,4-Dinitrophenol	0.825		0.825
1,4-Dichlorobenzene	0.330	U 0.		4-Nitrophenol	0.825		0.825
Benzyl alcohol	0.330	υ ο.:	330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330	U 0.	330	2,4-Dinitrotoluene	0.330	_	0.330
2-Methylphenol	0.330	U 0.	330	Diethylphthalate	0.330		0.330
''(2-Chloroisopropyl)ether	0.330	U 0.	330	4-Chlorophenyl-phenylether	0.330	U	0.330
≥thylphenol	0.330	U 0.	330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.330	U 0.	330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U O.	330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U 0.	330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U 0.	330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	บ 0.	330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U 0.	330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	υ 0.	330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	υ O.	330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U 0.	330	Di-n-butylphthalate	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330	U 0.	330	Fluoranthene	0.330		0.330
Naphthalene	0.330	υ O	330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	υ O.	330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U 0.	330	3,3'-Dichlorobenzidine	0.330	ט	0.330
4-Chloro-3-methylphenol	0.330	U 0.	330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	υο.	330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	υο	330	bis(2-Ethylhexyl)phthalate	0.330	U	0.330
2,4,6-Trichlorophenol	0.330	U 0.	330	Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	U 0.	825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U 0.	330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U 0.	825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U 0.	330	Indeno(1,2,3-cd)pyrene	0.330	U (0.330
Acenaphthylene	0.330	υο.	330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U (0.330

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-11-191

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK SAMPLE DATE: not spec SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	71	23 - 120
2-Fluorobiphenyl	88	30 - 115
Terphenyl-D14	82	18 - 137
Phenol-D5	71	24 - 113
2-Fluorophenol	62	25 - 121
2,4,6-Tribromophenol	78	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}\mbox{\ensuremath{-}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 51 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-11-191

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 1.0

UNITS:

MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
Arsenic	0.010	U	0.010	7060	12/06/93	
Aluminum	0.20	U	0.20	6010	12/05/93	
Barium	0.20	ប	0.20	6010	12/05/93	
Beryllium	0.0050	U	0.0050	6010	12/05/93	
Cadmium	0.0050	υ	0.0050	6010	12/05/93	
Chromium	0.010	U	0.010	6010	12/05/93	
Copper	0.025	U	0.025	6010	12/05/93	
Iron	0.10	ប	0.10	6010	12/05/93	
Nickel	0.040	U	0.040	6010	12/05/93	
Lead	0.0030	ប	0.0030	7421	12/06/93	
Mercury	0.00020	U	0.00020	7471	12/03/93	
Silver	0.010	U	0.010	6010	12/05/93	
Zinc	0.020	U	0.020	6010	12/05/93	
					•	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK

SAMPLE DATE:

SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/22/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		I	Reporting				Reporting
	Result	Qual	Limit		Result	Qual	Limit
Chloromethane	1	.O t	J 10	1,2-Dichloropropane		5	υ 5
Bromomethane	1	.O t	J 10	trans-1,3-Dichloropropene		5	Ŭ 5
Vinyl chloride	1	.Ο τ	J 10	Trichloroethene		5	Ŭ 5
Chloroethane	1	.0 t	J 10	Chlorodibromomethane		5	Ŭ 5
Methylene chloride	1	.0 t	J 10	1,1,2-Trichloroethane		5	υ 5
Acetone	10	0 t	J 100	Benzene		5	υ 5
Carbon disulfide		5 t	J 5	cis-1,3-Dichloropropene		5	υ 5
1,1-Dichloroethene		5 t	J 5	2-Chloroethylvinyl ether		10	U 10
<pre>1 -Dichloroethane</pre>		5 τ	J 5	Bromoform		5	Ŭ 5
us-1,2-Dichloroethene		5 t	J 5	2-Hexanone	!	50	บ 50
cis-1,2-Dichloroethene		5 t	5	4-Methyl-2-pentanone		50	บ 50
Chloroform		5 t	5	Tetrachloroethene		5	υ 5
1,2-Dichloroethane		5 t	J 5	1,1,2,2-Tetrachloroethane		5	ช 5
2-Butanone	10) O	100	Toluene		5	Ŭ 5
1,1,1-Trichloroethane		5 t	5	Chlorobenzene		5	U 5
Carbon tetrachloride		5 t	5	Ethylbenzene		5	บ 5
Vinyl acetate	1	.0 t	J 10	Styrene		5	ช 5
Dichlorobromomethane		5 t	J 5	Xylenes, total		5	υ 5

Surrogates	% Recovery	Limits			
TOLUENE-D8	96	88 - 110			
BROMOFLUOROBENZENE	103	86 - 115			
1,2-DICHLOROETHANE-D4	100	76 - 114			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 53 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684 409832-003-01 Work Order

Work Order: B3-11-191

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: KPA8240

SAMPLE ID: LAB BLANK

SAMPLE DATE:

SAMPLE MATRIX: SOIL ANALYSIS DATE: 11/23/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

		F	Reporting				Re	porting
	Result	Qual	Limit		Result	Qual	٠	Limit
Chloromethane	1	10 U	J 10	1,2-Dichloropropane		5	U	5
Bromomethane	1	ro n	J 10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	ro n	J 10	Trichloroethene		5	U	5
Chloroethane	1	LO U	J 10	Chlorodibromomethane		5	U	5
Methylene chloride	5.	.1 J	10	1,1,2-Trichloroethane		5	U	5
Acetone	1.	.6 ј	100	Benzene		5	U	5
Carbon disulfide		5 U	J 5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 U	5	2-Chloroethylvinyl ether		10	U	10
1 '-Dichloroethane		5 U	J 5	Bromoform		5	U	5
s-1,2-Dichloroethene		5 U	J 5	2-Hexanone	ſ	50	U	50
cis-1,2-Dichloroethene		5 U	J 5	4-Methyl-2-pentanone	ı	50	U	50
Chloroform		5 U	J 5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 U	J 5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	3.	2 Ј	100	Toluene		5	U	5
1,1,1-Trichloroethane		5 U	J 5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 U	J 5	Ethylbenzene		5	U	5
Vinyl acetate	1	.o u	J 10	Styrene		5	U	5
Dichlorobromomethane		5 U	J 5	Xvlenes, total		5	U	5

Surrogates	% Recovery	Limits			
TOLUENE-D8	101	81 - 117			
BROMOFLUOROBENZENE	97	74 - 121			
1,2-DICHLOROETHANE-D4	102	70 - 120			

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 54 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME ICP Metals

TEST CODE 6010

Metals by ICP

Inductively coupled emission spectroscopy according to Method 6010, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

Hazardous Substance List Volatiles

Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HEL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance

List Extractables

Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction

followed by GC/MS analysis.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS GF

Arsenic

Graphite Furnace Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes,

EPA-600/4-82-055, December 1982.

TEST NAME Chromium VI

TEST CODE CR VI

Chromium VI

Method 7196, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Colorimetric analysis. Equivalent to Standard Methods 3500-Cr D.

TEST NAME Mercury

TEST CODE HG AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption. Method 7470 is used for water.

Page: 55 of 55

Company: IT CORPORATION

Date: 12/17/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-191

TEST NAME Mercury

TEST CODE HG AA

Method 245.5-"Technical Additions to Methods for Chemical Analysis of Water and Wastes,"

EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK2

Method not available.

TEST NAME Lead - Graphite Furnace

TEST CODE PB GF

Lead

EPA 7421, SW-846, Test Methods for Evaluating Solid

Graphite

Wastes, Third Edition.

Furnace

EPA 239.2-Technical Additions to Methods for Chemical

Analysis of Water and Wastes," EPA-600/4-82-055,

December 1982.

TEST NAME GFAA Digestion - Soil

TEST CODE Z3050F

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for

Graphite Furnace/Flame AA analysis.

TEST NAME ICPES Digestion - Soil

TEST CODE Z3050P

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for ICPES analysis. Equivalent to Method 3050A, SW-846

Update I, July 1992.

IN JATIONAL TECHNOLOGY CORPORATION	ANALYSIS REL ST AND CHAIN OF CUSTODY RECORD*	Reference Document N Page 1 of 2	314088
Project Name/No. 1 Tinker 5001	Samples Shipment Date 7 11 / 13 / 13	Bill to:5 401832, 103.01	White
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Project Manager 4 J. Textler	Project Contact/Phone 12 D. M. 6.14 \$ 506 - 736 - 2260	0 T T on one	ompa
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Required Report Date 11 NOT WAS	15 Werkin	17

	2 - WA	Z						
Sample ¹⁴ Number	Sample 15 Description/Type	Collected Type Volume	Container 17	Sample 18 Volume	Pre- 19 servative	Requested Testing 20 Program	Condition on 21	.: Disposal 22 Record No.
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AISTON MS/MSD Special Instructions: 23

Sample Disposal: ²⁵ Return to Client 🗍 Unknown 12 Poison B 📋 Skin Irritant 📋

*See back of form for special instructions

(mos.)

Archive

Disposal by Lab 🖳

Date: Time:

Date: Time: Date: Time:

Project Specific (specify) 1. Received by 28 QC Level: 27 15/93 <u>K</u> urnaround Time Required: 26 1. Relinquished by ²⁸ Rush Normal 🖳

(Signature/Affiliation) dg Date: 117 Time:

[Signature/Affiliation]

2. Received by (Signeture/Affiliation) 3. Received by (Signature/Affiliation) Date: Time: Date: Time: 2. Relinquished by (Signature, Affiliation) 3. Relinquished by (Signature/Affiliation)

MCA 3/15/91

Comments: 29

II. LANATIONAL
TECHNOLOGY
CORPORATION

Project Name Tinker Scott

ANALYSIS REQUEST AND \lor CHAIN OF CUSTODY RECORD (cont.)*

Project No. 406833. 23 of

Reference Document No.30 Page_2_of_2_

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Samples Shipment Date __ 11,715133

MCA 3/15/91

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FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
01B						
	Arsenic	B311191-11B	12023050F2	12/02/93	12/06/93	85.5
	Chromium VI	B311191-11B	1123CR VI1	11/22/93	11/23/93	49.0
	Mercury	B311191-11B	1203HGAA3	12/03/93	12/03/93	123
	Lead	B311191-11B	12023050F2	12/02/93	12/06/93	342

Sample ID : A1540-MS

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B						
	Arsenic	B311191-11B	12023050F2	12/02/93	12/06/93	116
	Chromium VI	B311191-11B	1123CR_VI1	11/22/93	11/23/93	51.0
	Mercury	B311191-11B	1203HGAA3	12/03/93	12/03/93	120
	Lead	B311191-11B	12023050F2	12/02/93	12/06/93	465

Sample ID : A1540-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03B						
	Arsenic	B311191-11B	12023050F2	12/02/93	12/06/93	86.2
	Chromium VI	B311191-11B	1123CR VI1	11/22/93	11/23/93	51.0
	Mercury	B311191-11B	1203HGAA3	12/03/93	12/03/93	127
	Lead	B311191-11B	12023050F2	12/02/93	12/06/93	345

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04B						
	Arsenic	B311191-11B	12023050F2	12/02/93	12/06/93	91.7
	Chromium VI	B311191-11B	1123CR_VI1	11/22/93	11/23/93	51.0
	Mercury	B311191-11B	1203HGAA3	12/03/93	12/03/93	101
	Lead	B311191-11B	12023050F2	12/02/93	12/06/93	91.7

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
05B						
	Arsenic Chromium VI Mercury Lead	B311191-11B B311191-11B B311191-11B B311191-11B	12023050F2 1123CR_VI1 1203HGAA3 12023050F2	12/02/93 11/22/93 12/03/93 12/02/93	11/23/93 12/03/93	110 50.0 115 110

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
06в						
	Arsenic	B311191-11B	12023050F2	12/02/93	12/06/93	92.6
	Chromium VI	B311191-11B	1123CR VI1	11/22/93	11/23/93	49.5
	Mercury	B311191-11B	1203HGAA3	12/03/93	12/03/93	119
	Lead	B311191-11B	12023050F2	12/02/93	12/06/93	370

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
07B						
	Arsenic	B311191-11B	12023050F2	12/02/93	12/06/93	98
	Chromium VI	B311191-11B	1123CR_VI1	11/22/93	11/23/93	50.0
	Mercury	B311191-11B	1203HGAA3	12/03/93	12/03/93	122
	Lead	B311191-11B	12023050F2	12/02/93	12/06/93	98

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
08B						
	Arsenic Chromium VI Mercury Lead	B311191-11B B311191-11B B311191-11B B311191-11B	12023050F2 1123CR_VI1 1203HGAA3 12023050F2	12/02/93 11/22/93 12/03/93 12/02/93	11/23/93 12/03/93	109 51.0 118 109

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
09в						
	Arsenic	B311191-11B	12023050F2	12/02/93	12/06/93	111
	Chromium VI	B311191-11B	1123CR VI1	11/22/93	11/23/93	50.5
	Mercury	B311191-11B	1203HGAA3	12/03/93	12/03/93	110
	Lead	B311191-11B	12023050F2	12/02/93	12/06/93	111

Sample ID : LAB BLANK

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
11B						
	Arsenic Chromium VI Mercury Lead	B311191-11B B311191-11B B311191-11B B311191-11B	12023050F2 1123CR_VI1 1203HGAA3 12023050F2	12/02/93 11/23/93 12/03/93 12/02/93	11/23/93 12/03/93	1.0 1.0 1.0



ANALYTICAL

SERVICES Routed to KK, CF, TL

CERTIFICATE OF ANALYSIS

12/28/93

Date: 12/23/93

IT CORPORATION 1250 CAPITAL OF TX HWY BLDG. 3, SUITE 200 AUSTIN, TX 78746-6443 TIM JENNINGS

Work Order: B3-11-254

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O.5001 Date Received: 11/19/93 Number of Samples: Sample Type: SOIL

409832-003-01

I. Introduction

Samples were labeled as follows:

CAMBIE TREMESTOR	
SAMPLE IDENTIFICATION	LABORATORY #
A1548	B3-11-254-01
A1548-MS	B3-11-254-02
A1548-MSD	B3-11-254-03
A1549	B3-11-254-04
A1550	B3-11-254-05
A1551	B3-11-254-06
A1552	B3-11-254-07
A1553	B3-11-254-08
A1554	B3-11-254-09
LAB BLANK #1	B3-11-254-10
LAB BLANK #1	B3-11-254-11
LAB BLANK #2	B3-11-254-12
	20: 12

Reviewed and Approved:

Laboratory Director

Page: 2 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-11-254

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Page: 3 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-254

SAMPLE ID: A1548

SAMPLE DATE: 11/18/93 10:53:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference
Chromium VI		0.50U	0.50	MG/KG	12/08/93	EPA7196

Page: 4 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1548

SAMPLE DATE: 11/18/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 12/01/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

			eporting				D.	eporting
	Result Qu	al	Limit		Result	Qua		-
Chloromethane Bromomethane Vinyl chloride Chloroethane Methylene chloride	10 10 10 10	บ บ บ	10 10 10 10	1,2-Dichloropropane trans-1,3-Dichloropropene Trichloroethene Chlorodibromomethane 1,1,2-Trichloroethane		5 5 5 5	U U U	5 5 5 5
Acetone Carbon disulfide 1,1-Dichloroethene	8.6 5 5	JB U U	100 5 5	Benzene cis-1,3-Dichloropropene 2-Chloroethylvinyl ether	1	5 5 5 .0	U U U	5 5 5 10
1,1-Dichloroethane trans-1,2-Dichloroethene cis-1,2-Dichloroethene	5 5 5	U U	5 5 5	Bromoform 2-Hexanone 4-Methyl-2-pentanone	5	5	ם מ	5 50 50
Chloroform 1,2-Dichloroethane 2-Butanone 1,1,1-Trichloroethane	5 5 2.5	U U J	5 5 100	Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene	_	5 5 5	U U	5 5 5
Carbon tetrachloride Vinyl acetate Dichlorobromomethane	5 5 10 5	n n	5 5 10 5	Chlorobenzene Ethylbenzene Styrene Xylenes, total		5 5 5 5	U U U	5 5 5 5

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	106	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 5 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: **A1548**SAMPLE DATE: **11/18/93**SAMPLE MATRIX: **SOIL**

EXTRACTION DATE: 11/28/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			;	Reporti
R	esult	Qual	Limit		Result	Qual	-
Phenol							
= -	0.330		0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.04	J	0.330
bis(2-Chloroisopropyl)ether			0.330	4-Chlorophenyl-phenylether	0.330	บ	0.330
4-Methylphenol	0.330		0.330	Fluorene	0.330	บ	0.330
N-Nitroso-di-n-propylamine	0.330		0.330	4-Nitroaniline	0.825	บ	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330	บ	0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825		0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.330	บ	0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.330	บ	0.330	Di-n-butylphthalate	1.4	_	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330		0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.56		0.330
Hexachlorobutadiene	0.330		0.330	3,3'-Dichlorobenzidine	0.330	IJ	0.330
4-Chloro-3-methylphenol	0.330		0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330		0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330		0.330	bis(2-Ethylhexyl)phthalate		Ŭ	0.330
2,4,6-Trichlorophenol	0.330		0.330	Di-n-octylphthalate	0.330	II	0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b) fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330		0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825		0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.330		0.330
-		•		Benzo(g,h,i)perylene	0.330		0.330
				Demo(g, ii, I) per y telle	0.330	U	0.330

Page: 6 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1548

SAMPLE DATE: 11/18/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	68	23 - 120
2-Fluorobiphenyl	66	30 - 115
Terphenyl-D14	71	18 - 137
Phenol-D5	75	24 - 113
2-Fluorophenol	57	25 - 121
2,4,6-Tribromcphenol	68	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 7 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-11-254

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1548
SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 92.5926

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.9		1.0	7060	12/09/93
Aluminum	12000	N	19	6010	12/09/93
Barium	690	N	19	6010	12/09/93
Beryllium	1.4		0.46	6010	12/09/93
Cadmium	1.1		0.46	6010	12/09/93
Chromium	15		0.93	6010	12/09/93
Copper	8.5		2.3	6010	12/09/93
Iron	13000	N	9.3	6010	12/09/93
Nickel	17		3.7	6010	12/09/93
Lead	7.2	N	0.30	7421	12/09/93
Mercury	0.030	ប	0.030	7471	12/07/93
Silver	0.93	ប	0.93	6010	12/09/93
Zinc	23		1.9	6010	12/09/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-11-254

SAMPLE ID: A1548-MS

SAMPLE DATE: 11/18/93 10:53:00

SAMPLE MATRIX: SOIL

Test Name	Note		Reporting		Date	Method
Chromium VI	Ref	Result	<u>Limit</u>	Units	Analyzed	Reference
Chi Chi Luni VI		101		% REC	12/08/93	EPA7196

Page: 9 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1548-MS
SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/01/93
DILUTION FACTOR: 1.0

UNITS: % REC

	Result			Result
1,1-Dichloroethene	103	Trichloro	ethene	91
		Benzene		102
		Toluene		98
		Chloroben	zene	96
	Surrogates	% Recovery	Limits	
	TOLUENE-D8	103	81 - 117	
	BROMOFLUOROBENZENE	98	74 - 121	
	1,2-DICHLOROETHANE-D4	105	70 - 120	

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 10 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1548-MS SAMPLE DATE: 11/18/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93 ANALYSIS DATE: 12/09/93 DILUTION FACTOR: 0.033

UNITS: % REC

Result Result Phenol 75 Acenaphthene 82 2-Chlorophenol 80 4-Nitrophenol 63 1,4-Dichlorobenzene 79 2,4-Dinitrotoluene 68 N-Nitroso-di-n-propylamine 76 Pentachlorophenol 79 1,2,4-Trichlorobenzene 80 Pyrene 79 4-Chloro-3-methylphenol 72

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	68	23 - 120			
2-Fluorobiphenyl	69	30 - 115			
Terphenyl-D14	72	18 - 137			
Phenol-D5	74	24 - 113			
2-Fluorophenol	65	25 - 121			
2,4,6-Tribromophenol	71	19 - 122			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 11 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1548-MS
SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 92.5926

UNITS: % REC

Result	Method Reference	Analysis Date
Arsenic 100	7060	12/09/93
Aluminum 1371	6010	12/09/93
Barium 905	6010	12/09/93
Beryllium 89	6010	12/09/93
Cadmium 85	6010	12/09/93
Chromium 95	6010	12/09/93
Copper 91	6010	12/09/93
Iron 548	6010	12/09/93
Nickel 90	6010	12/09/93
Lead 143	7421	12/09/93
Mercury 110	7471	12/07/93
Silver 85	6010	12/09/93
Zinc 94	6010	12/09/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

% RPD for matrix spikes outside control limits due to matrix interference on barium analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable. Page: 12 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

SAMPLE ID: A1548-MSD

SAMPLE DATE: 11/18/93 10:53:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	<u>Limit</u>	Units	Analyzed	Reference
Chromium VI		95		% REC	12/08/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1548-MSD SAMPLE DATE: 11/18/93 SAMPLE MATRIX: SOIL

ANALYSIS DATE: 12/01/93
DILUTION FACTOR: 1.0

UNITS: % REC

	Result	•	Result
1,1-Dichloroethene	106	Trichloroethene Benzene Toluene Chlorobenzene	87 102 101 99

Surrogates	% Recovery	Limits
TOLUENE-D8	105	81 - 117
BROMOFLUOROBENZENE	98	74 - 121
1,2-DICHLOROETHANE-D4	104	70 - 120

- U none detected
- ${\tt J}$ estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: KPA8270

SAMPLE ID: A1548-MSD SAMPLE DATE: 11/18/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93 ANALYSIS DATE: 12/09/93 DILUTION FACTOR: 0.033

UNITS: % REC

I	Result		Result
Phenol	71	Acenaphthene	78
2-Chlorophenol	77	4-Nitrophenol	65
1,4-Dichlorobenzene	74	2,4-Dinitrotoluene	70
N-Nitroso-di-n-propylamine	76	Pentachlorophenol	79
1,2,4-Trichlorobenzene	79	Pyrene	78
4-Chloro-3-methylphenol	72	-	

Surrogates	% Recovery	Limits
Nitrobenzene-D5	68	23 - 120
2-Fluorobiphenyl	65	30 - 115
Terphenyl-D14	71	18 - 137
Phenol-D5	72	24 - 113
2-Fluorophenol	62	25 - 121
2,4,6-Tribromophenol	65	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1548-MSD SAMPLE DATE: 11/18/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 96.1538

UNITS: % REC

Result	Method Reference	Analysis Date
Arsenic 99	7060	12/00/02
Aluminum 1155	6010	12/09/93 12/09/93
Barium 1358	6010	12/09/93
Beryllium 89	6010	
Cadmium 86	6010	12/09/93
Chromium 93	6010	12/09/93
Copper 90	6010	12/09/93
Iron 448	6010	12/09/93
Nickel 89	6010	12/09/93
Lead 129	7421	12/09/93
Mercury 110	7421	12/09/93
Silver 86	6010	12/07/93
Zinc 92	6010	12/09/93 12/09/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike duplicate outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

% RPD for matrix spikes outside control limits due to matrix interference on barium analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-254

SAMPLE ID: A1549

SAMPLE DATE: 11/18/93 11:00:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Dat	te	Method
Test Name	Ref	Result	Limit	Units	Analy	zed	Reference
Chromium VI		0.50 U	0.50	MG/KG	12/08	3/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1549

SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/01/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

			Reporti	.ng			Re	portin
	Result	Qual	Limit		Result	Qua)	L	Limit
Chloromethane	:	LO	U 10	1,2-Dichloropropane		5	U	5
Bromomethane		.0	U 10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride		LO	U 10	Trichloroethene		5	U	5
Chloroethane		10	U 10	Chlorodibromomethane	•	5	U	5
Methylene chloride	5.	5 J	в 10	1,1,2-Trichloroethane		5	U	5
Acetone	:	13 J	B 100	Benzene		5	U	5
Carbon disulfide		5	U 5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5	U 5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane		5	U 5	Bromoform		5	U	5
trans-1,2-Dichloroethene		5	U 5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene		5	U 5	4-Methyl-2-pentanone	!	50	U	50
Chloroform		5	U 5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	U 5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	00	U 100	Toluene		5	U	5
1,1,1-Trichloroethane		5	U 5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	U 5	Ethylbenzene		5	U	5
Vinyl acetate	:	LO	U 10	Styrene		5	U	5
Dichlorobromomethane		5	U 5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	100	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1549 SAMPLE DATE: 11/18/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93 ANALYSIS DATE: 12/09/93 DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			1	Reporti
Re	esult Q	ual	Limit		Result	Qual	Limit
Phenol	0.330	11	0.330	2,6-Dinitrotoluene	0.330) 11	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.825		0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825		0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.825		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330		0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.072		0.330
bis(2-Chloroisopropyl)ether	0.330		0.330	4-Chlorophenyl-phenylether			0.330
4-Methylphenol	0.330		0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.330	บ	0.330	4-Nitroaniline	0.825		0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)		U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	υ (0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U (0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	1.2	?	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.67	7	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U (0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	U	0.330	Chrysene	0.330	U (0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	1.5		0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U (0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U (0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U (0.330
Dimethylphthalate	0.330		0.330	<pre>Indeno(1,2,3-cd)pyrene</pre>	0.330	_	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330) U	0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1549

SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	67	23 - 120
2-Fluorobiphenyl	67	30 - 115
Terphenyl-D14	69	18 - 137
Phenol-D5	74	24 - 113
2-Fluorophenol	62	25 - 121
2,4,6-Tribromophenol	64	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 20 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1549

SAMPLE DATE: 11/18/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 108.696

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic Aluminum Barium Beryllium Cadmium Chromium Copper Iron Nickel Lead Mercury Silver Zinc	1.8 16000 22 1.9 0.55 19 22 13000 28 2.5 0.031 1.1	N UN N N U	1.1 22 22 0.54 0.54 1.1 2.7 11 4.3 0.33 0.031 1.1 2.2	7060 6010 6010 6010 6010 6010 6010 6010	12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

SAMPLE ID: A1550

SAMPLE DATE: 11/18/93 11:00:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.50U	0.50	MG/KG	12/08/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1550

SAMPLE DATE: 11/18/93 SAMPLE MATRIX: SOIL

ANALYSIS DATE: 12/01/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

Surrogates TOLUENE-D8	% Recovery	Limits
BROMOFLUOROBENZENE	102	81 - 117
1,2-DICHLOROETHANE-D4	97	74 - 121
	104	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
- - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3- =4

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1550

SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			1	Reporti
R	esult	Qual	Limit		Result	Qual	Limit
			•				
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.330	_	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.825	S U	0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330) U	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	υ (0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330) U	0.330	Dibenzofuran	0.330	ט כ	0.330
1,2-Dichlorobenzene	0.330	U (0.330	2,4-Dinitrotoluene	0.330	U C	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.07	7 J	0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
4-Methylphenol	0.330	U (0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330) U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330) U	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	υ (0.330	Hexachlorobenzene	0.330	บ (0.330
2,4-Dimethylphenol	0.330	ט (0.330	Pentachlorophenol	0.825	ט ו	0.825
Benzoic Acid	0.330	ט (0.330	Phenanthrene	0.330	υ (0.330
bis(2-Chloroethoxy)methane	0.330	U (0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U (0.330	Di-n-butylphthalate	1.2	:	0.330
1,2,4-Trichlorobenzene	0.330	U	0.330	Fluoranthene	0.330	ט (0.330
Naphthalene	0.330	ט (0.330	Pyrene	0.330		0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.78		0.330
Hexachlorobutadiene	0.330	ט י	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	ט (0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330	υ	0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330	υ	0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b) fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330		0.330	Benzo(k) fluoranthene	0.330		0.330
2-Nitroaniline	0.825		0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330	_	0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330	_	0.330	Dibenzo(a,h)anthracene	0.330		0.330
		_		Benzo(g,h,i)perylene	0.330		0.330
				(3// -/Eoc]	2.200	•	

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1550

SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	68	23 - 120				
2-Fluorobiphenyl	64	30 - 115				
Terphenyl-D14	69	18 - 137				
Phenol-D5	73	24 - 113				
2-Fluorophenol	59	25 - 121				
2,4,6-Tribromophenol	67	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- ${\tt J}$ estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1550

SAMPLE DATE: 11/18/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 108.696

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.7		1.1	7060	12/09/93
Aluminum	12000	N	22	6010	12/09/93
Barium	22	UN	22	6010	12/09/93
Beryllium	1.6		0.54	6010	12/09/93
Cadmium	0.54	U	0.54	6010	12/09/93
Chromium	14		1.1	6010	12/09/93
Copper Iron	20		2.7	6010	12/09/93
Nickel	9800	N	11	6010	12/09/93
Lead	22		4.3	6010	12/09/93
Mercury	3.0	N	0.32	7421	12/09/93
Silver	0.032	U	0.032	7471	12/07/93
Zinc	1.1	ט	1.1	6010	12/09/93
ZIIIC	26		2.2	6010	12/09/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-11-254

SAMPLE ID: A1551

SAMPLE DATE: 11/18/93 11:13:00

SAMPLE MATRIX: SOIL

	Note		Reporting			Date	Method
Test Name Chromium VI	<u>Ref</u>	Result	Limit	Units		Analyzed	Reference
Chromitum VI		0.500	0.50	MG/KG		12/08/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1551

SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/01/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

,	Result Qu		eporting Limit		Result	Qua		eporting Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	6.5	JВ	10	1,1,2-Trichloroethane		5	U	5
Acetone	7.2	JB	100	Benzene		5	U	5
Carbon disulfide	5	บ	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	•	LO	U	10
1,1-Dichloroethane	5	U	5	Bromoform	•	5	U	5
trans-1,2-Dichloroethene	5	บ	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	•	50	Ū	50
Chloroform	5	U	5	Tetrachloroethene		5	ט	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	4.0	J	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	104	81 - 117
BROMOFLUOROBENZENE	98	74 - 121
1,2-DICHLOROETHANE-D4	108	70 - 120

- U none detected
- ${\tt J}$ estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1551
SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting				Reportin
	Result	Qual	Limit		Result	Qual	**
Phenol	0.330	, ,,	0 330			_	
bis(2-Chloroethyl)ether	0.330		0.330	2,6-Dinitrotoluene	0.330		0.330
2-Chlorophenol	0.330		0.330	3-Nitroaniline	0.825	U	0.825
1,3-Dichlorobenzene	0.330		0.330	Acenaphthene	0.330	U	0.330
1,4-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825		0.825
Benzyl alcohol	0.330		0.330	4-Nitrophenol	0.825		0.825
1,2-Dichlorobenzene	0.330		0.330	Dibenzofuran	0.330	U	0.330
2-Methylphenol	0.330		0.330	2,4-Dinitrotoluene	0.330		0.330
bis(2-Chloroisopropyl)ethe	r 0.330		0.330	Diethylphthalate	0.082	J	0.330
4-Methylphenol	0.330		0.330	4-Chlorophenyl-phenylether		U	0.330
N-Nitroso-di-n-propylamine	0.330		0.330	Fluorene	0.330	U	0.330
Hexachloroethane			0.330	4-Nitroaniline	0.825	U	0.825
Nitrobenzene	0.330		0.330	4,6-Dinitro-2-methylphenol		U	0.825
Isophorone	0.330		0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
2-Nitrophenol	0.330		0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2,4-Dimethylphenol	0.330		0.330	Hexachlorobenzene	0.330	U	0.330
Benzoic Acid	0.330 0.330		0.330	Pentachlorophenol	0.825	U	0.825
bis(2-Chloroethoxy)methane	0.330		0.330	Phenanthrene	0.330	U	0.330
2,4-Dichlorophenol			0.330	Anthracene	0.330	U	0.330
1,2,4-Trichlorobenzene	0.330		0.330	Di-n-butylphthalate	1.4		0.330
Naphthalene	0.330		0.330	Fluoranthene	0.330	U	0.330
4-Chloroaniline	0.330		0.330	Pyrene	0.330	U	0.330
Hexachlorobutadiene	0.330		0.330	Butylbenzylphthalate	0.96		0.330
4-Chloro-3-methylphenol	0.330	_	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
2-Methylnaphthalene	0.330		0.330	Benzo(a)anthracene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330 0.330		0.330	Chrysene	0.330	U	0.330
2,4,6-Trichlorophenol			0.330	bis(2-Ethylhexyl)phthalate	2.1		0.330
2,4,5-Trichlorophenol	0.330		0.330	Di-n-octylphthalate	0.330	U	0.330
2-Chloronaphthalene	0.825		0.825	Benzo(b)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.330		0.330	Benzo(k)fluoranthene	0.330	U	0.330
Dimethylphthalate	0.825 0.330		0.825	Benzo(a)pyrene	0.330	U	0.330
Acenaphthylene	0.330		330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
	0.330	U (330	Dibenzo(a,h)anthracene	0.330	U (0.330
				Benzo(g,h,i)perylene	0.330	υ (0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1551

SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	41	23 - 120
2-Fluorobiphenyl	40	30 - 115
Terphenyl-D14	47	18 - 137
Phenol-D5	51	24 - 113
2-Fluorophenol	44	25 - 121
2,4,6-Tribromcphenol	42	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 30 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1551

SAMPLE DATE: 11/18/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 104.167

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.1		0.86	7060	12/09/93
Aluminum	9900	N	21	6010	12/09/93
Barium	21	UN	21	6010	12/09/93
Beryllium	1.5		0.52	6010	12/09/93
Cadmium	0.52	U	0.52	6010	12/09/93
Chromium	11		1.0	6010	12/09/93
Copper	19		2.6	6010	12/09/93
Iron	11000	N	10	6010	12/09/93
Nickel	21		4.2	6010	12/09/93
Lead	7.8	N	1.0	7421	12/09/9
Mercury	0.030	U	0.030	7471	12/07/9
Silver	1.0	U	1.0	6010	12/09/9
Zinc	22		2.1	6010	12/09/9

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 802-6684

(512) 892-6684 409832-003-01 Work Order: B3-11-254

SAMPLE ID: A1552

SAMPLE DATE: 11/18/93 11:25:00

SAMPLE MATRIX: SOIL

	Note Reporting			Reporting		
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	12/08/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1552

SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		Re	eporting				Re	eportin
	Result Qu	al	Limit		Result	Qua	1	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	7.4	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	11	JВ	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	:	10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	į	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	Ū	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	2.0	J	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	. 5	Ū	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	105	81 - 117				
BROMOFLUOROBENZENE	102	74 - 121				
1,2-DICHLOROETHANE-D4	105	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 33 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1552
SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			1	Reporti:
Re	sult	Qual	Limit		Result	Qual	Limit
Phasel					0.00		0 330
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330	_	0.330	3-Nitroaniline	0.82	-	0.825
2-Chlorophenol	0.330	_	0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330	_	0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.829		0.825 0.330
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.33		0.330
2-Methylphenol	0.330		0.330 0.330	Diethylphthalate			0.330
<pre>bis(2-Chloroisopropyl)ether 4-Methylphenol</pre>	0.330		0.330	4-Chlorophenyl-phenylether	0.33		0.330
			0.330	Fluorene	0.82		0.825
N-Nitroso-di-n-propylamine Hexachloroethane	0.330			4-Nitroaniline			0.825
Nitrobenzene	0.330		0.330	4,6-Dinitro-2-methylphenol			0.825
	0.330		0.330	N-Nitrosodiphenylamine (1)	0.330		0.330
Isophorone 2-Nitrophenol	0.330	-	0.330	4-Bromophenyl-phenylether Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	_	0.330		0.33		0.330
Benzoic Acid	0.330	-	0.330	Pentachlorophenol Phenanthrene	0.82		0.825
bis(2-Chloroethoxy)methane	0.330		0.330		0.33	-	0.330
2,4-Dichlorophenol	0.330			Anthracene	0.33		0.330
1,2,4-Trichlorobenzene	0.330	-	0.330	Di-n-butylphthalate	0.06.		0.330
Naphthalene	0.330	_	0.330	Fluoranthene	0.330		0.330
4-Chloroaniline	0.330	-	0.330 0.330	Pyrene	0.330		0.330
Hexachlorobutadiene				Butylbenzylphthalate			
	0.330		0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330		0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330		0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene 2,4,6-Trichlorophenol	0.330		0.330	bis(2-Ethylhexyl)phthalate			0.330
- · · · · · · · · · · · · · · ·	0.330		0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b) fluoranthene	0.330	-	0.330
2-Chloronaphthalene	0.330		0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825		0.825	Benzo(a)pyrene	0.330		0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330	ט ע	0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330	ט כ	0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1552

SAMPLE DATE: 11/18/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	70	23 - 120			
2-Fluorobiphenyl	65	30 - 115			
Terphenyl-D14	72	18 - 137			
Phenol-D5	68	24 - 113			
2-Fluorophenol	61	25 - 121			
2,4,6-Tribromophenol	68	19 - 122			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1552 SAMPLE DATE: 11/18/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 90.9091

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.2	ט	1.2	7060	12/09/93
Aluminum	1800	N	18	6010	12/09/93
Barium	56	N	18	6010	12/09/93
Beryllium	0.45	ប	0.45	6010	12/09/93
Cadmium	0.45	U	0.45	6010	12/09/93
Chromium	8.5		0.91	6010	12/09/93
Copper	2.3	υ	2.3	6010	12/09/93
Iron	3700	N	9.1	6010	12/09/93
Nickel	6.3		3.6	6010	12/09/93
Lead	1.5	N	0.35	7421	12/09/93
Mercury	0.032	U	0.032	7471	12/07/93
Silver	0.91	ប	0.91	6010	12/09/93
Zinc	7.8		1.8	6010	12/09/93
					•

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1553
SAMPLE DATE: 11/16/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/30/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		Rep	orting				Re	porting
	Result Qual	LL	imit		Result	Qua.	1	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xvlenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	96	88 - 110
BROMOFLUOROBENZENE	98	86 - 115
1,2-DICHLOROETHANE-D4	104	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

SAMPLE ID: A1554

SAMPLE DATE: 11/18/93 12:15:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.0100	0.010	MG/L	11/19/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1554

SAMPLE DATE: 11/18/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/30/93
DILUTION FACTOR: 1.0

UNITS: UG/L

·	Result			porting Limit		Result	Qual		portinç Limit
Chloromethane	1	LO	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	1	LO	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	10	U	10	Trichloroethene		5	U	5
Chloroethane	1	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	1	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	10	00	U	100	Benzene		5	U	5
Carbon disulfide		5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5	U	5	2-Chloroethylvinyl ether	:	LO	U	10
1,1-Dichloroethane		5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene		5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform		5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	00	U	100	Toluene		5	U	5
1,1,1-Trichloroethane		5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	1	LO	U	10	Styrene		5	U	5
Dichlorobromomethane		5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	98	88 - 110
BROMOFLUOROBENZENE	100	86 - 115
1,2-DICHLOROETHANE-D4	104	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1554 SAMPLE DATE: 11/18/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 11/24/93
ANALYSIS DATE: 11/21/93
DILUTION FACTOR: 1.0

UNITS: U	G/L	R	eporting			1	Reporti
	Result	Qual	Limit		Result	Qual	Limit
Phenol	-		10		_		••
bis(2-Chloroethyl)ethe		10 U	10	2,6-Dinitrotoluene		.O U	10
2-Chlorophenol		.0 U	10	3-Nitroaniline	_	5 U	25
1,3-Dichlorobenzene	_	υ 0.	10	Acenaphthene	_	.O U	10
	_	.0 U	10	2,4-Dinitrophenol	_	5 U	25
1,4-Dichlorobenzene	-	.ο υ	10	4-Nitrophenol	_	5 U	25
Benzyl alcohol		υ 0.	10	Dibenzofuran	_	0 U	10
1,2-Dichlorobenzene	_	.O U	10	2,4-Dinitrotoluene	_	.O U	10
2-Methylphenol	_	.0 σ	10	Diethylphthalate	_	.O U	10
bis(2-Chloroisopropyl)		.0 ס	10	4-Chlorophenyl-phenylether		.0 U	10
4-Methylphenol	-	υ 0.	10	Fluorene		.O U	10
N-Nitroso-di-n-propyla		.0 ע	10	4-Nitroaniline	1	.O U	10
Hexachloroethane	1	.0 ע	10	4,6-Dinitro-2-methylphenol	L 2	5 U	25
Nitrobenzene	1	.0 ע	10	N-Nitrosodiphenylamine (1)	, 1	υ 0	10
Isophorone	1	.0 ע	10	4-Bromophenyl-phenylether	1	υ 0	10
2-Nitrophenol	1	.0 U	10	Hexachlorobenzene	1	υ 0	10
2,4-Dimethylphenol	1	.O U	10	Pentachlorophenol	2	5 U	25
Benzoic Acid	1	.0 ע	10	Phenanthrene	1	0 υ	10
bis(2-Chloroethoxy)met	hane 1	.0 σ	10	Anthracene	1	0 υ	10
2,4-Dichlorophenol	1	.0 σ	10	Di-n-butylphthalate	1	0 υ	10
1,2,4-Trichlorobenzene	1	.Ο σ	10	Fluoranthene	1	0 υ	10
Naphthalene	1	.0 ע	10	Pyrene	1	0 υ	10
4-Chloroaniline	1	.0 σ	10	Butylbenzylphthalate	1	0 υ	10
Hexachlorobutadiene	1	.0 σ	10	3,3'-Dichlorobenzidine	1	0 υ	10
4-Chloro-3-methylpheno	1 1	.0 σ	10	Benzo(a)anthracene	1	0 U	10
2-Methylnaphthalene	1	.0 σ	10	Chrysene	1	0 υ	10
Hexachlorocyclopentadi	ene 1	.0 σ	10	bis(2-Ethylhexyl)phthalate	. 1	0 υ	10
2,4,6-Trichlorophenol	1	υ 0.	10	Di-n-octylphthalate		υ 0	10
2,4,5-Trichlorophenol	1	υ 0.	10	Benzo(b)fluoranthene	1	0 υ	10
2-Chloronaphthalene	1	.0 ס	10	Benzo(k)fluoranthene	1	0 U	10
2-Nitroaniline	2	5 U	25	Benzo(a)pyrene	1	-	10
Dimethylphthalate	1	.Ο υ	10	Indeno(1,2,3-cd)pyrene	_	0 U	10
Acenaphthylene		.Ο υ	10	Dibenzo(a,h)anthracene	1		10
<u>-</u>	_	_		Benzo(g,h,i)perylene	1		10
				\3/, -/Por/ rono	-		

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1554
SAMPLE DATE: 11/18/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	32*	35 - 114				
2-Fluorobiphenyl	31*	43 - 116				
Terphenyl-D14	40	33 - 141				
Phenol-D5	29	10 - 94				
2-Fluorophenol	29	21 - 100				
2,4,6-Tribromophenol	37	10 - 123				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Referenced notes for these results:

Sample originally extracted 11/24/93 and analyzed 12/11/93 with two surrogates outside QC limits. Sample was re-extracted 12/13/93 and reanalyzed 12/15/93. Surrogates were within QC limits. Both analyses yielded similar results. Original analysis is reported.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1554
SAMPLE DATE: 11/18/93
SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.0

UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
Arsenic	0.010	Ū	0.010	7060	12/02/93	
Aluminum	0.20	U	0.20	6010	12/17/93	
Barium	0.20	ប	0.20	6010	12/17/93	
Beryllium	0.0050	υ	0.0050	6010	12/17/93	
Cadmium	0.0050	บ	0.0050	6010	12/17/93	
Chromium	0.010	υ	0.010	6010	12/17/93	
Copper	0.0250	ប	0.0250	6010	12/17/93	
Iron	0.10	U	0.10	6010	12/17/93	
Nickel	0.040	บ	0.040	6010	12/17/93	
Lead	0.0030	บ	0.0030	7421	12/02/93	
Mercury	0.00020	บ	0.00020	7471	12/01/93	
Silver	0.010	ប	0.010	6010	12/17/93	
Zinc	0.020	U	0.020	6010	12/17/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA < 0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-254

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference
Chromium VI		0.0100	0.010	MG/KG	12/08/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/01/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Reportin
	Result Qua	1	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	บ 5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		_	υ 5
Vinyl chloride	10	U	10	Trichloroethene		5	บ 5
Chloroethane	10	U	10	Chlorodibromomethane		5	บ 5
Methylene chloride	1.4	J	10	1,1,2-Trichloroethane		5	ປ 5
Acetone	3.7	J	100	Benzene		5	ປ 5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	บ 5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		LO	ບ 10
1,1-Dichloroethane	5	U	5	Bromoform		5	ប 5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	5	0	ບ 50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	5	0	ປ 50
Chloroform	5	U	5	Tetrachloroethene		5	υ 5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	T 5
2-Butanone	100	U	100	Toluene		5	υ 5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	T 5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	ช 5
Vinyl acetate	10	U	10	Styrene		5	ប 5
Dichlorobromomethane	5	U	5	Xylenes, total		5	Ŭ 5

Surrogates	% Recovery	Limits			
TOLUENE-D8	103	81 - 117			
BROMOFLUOROBENZENE	99	74 - 121			
1,2-DICHLOROETHANE-D4	99	70 - 120			

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			1	Reportin
R	esult	Qual	Limit		Result		
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	_	0.330	3-Nitroaniline	0.825	U	0.825
2-Chlorophenol	0.330	ט כ	0.330	Acenaphthene	0.330	Ū	0.330
1,3-Dichlorobenzene	0.330	ט כ	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	ט כ	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	ט כ	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	ט כ	0.330	2,4-Dinitrotoluene	0.330	U	0.330
2-Methylphenol	0.330	ט כ	0.330	Diethylphthalate	0.330	ט	0.330
bis(2-Chloroisopropyl)ether	0.330	U C	0.330	4-Chlorophenyl-phenylether	0.330	ט	0.330
4-Methylphenol	0.330	υ	0.330	Fluorene	0.330	ט	0.330
N-Nitroso-di-n-propylamine	0.330	U C	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	ט כ	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U C	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	U C	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330	บ	0.330
2,4-Dimethylphenol	0.330	ט כ	0.330	Pentachlorophenol	0.825	บ	0.825
Benzoic Acid	0.330	ט כ	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	ט (0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	ט (0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	ט (0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330		0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330	υ (0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330		0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b) fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330		0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825	υ	0.825	Benzo(a) pyrene	0.330		0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	_	0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.330		0.330
				Benzo(g,h,i)perylene	0.330		0.330
				. J / E 2		_	

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	71	23 - 120			
2-Fluorobiphenyl	70	30 - 115			
Terphenyl-D14	77	18 - 137			
Phenol-D5	72	24 - 113			
2-Fluorophenol	60	25 - 121			
2,4,6-Tribromophenol	64	19 - 122			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 46 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 1.0

UNITS: MG/KG

						_
	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	_
Arsenic	0.010	ט	0.010	7060	12/09/93	
Aluminum	0.20	U	0.20	6010	12/09/93	
Barium	0.20	บ	0.20	6010	12/09/93	
Beryllium	0.0050	U	0.0050	6010	12/09/93	
Cadmium	0.0050	U	0.0050	6010	12/09/93	
Chromium	0.010	U	0.010	6010	12/09/93	
Copper	0.025	U	0.025	6010	12/09/93	
Iron	0.10	U	0.10	6010	12/09/93	
Nickel	0.040	บ	0.040	6010	12/09/93	
Lead	0.0030	U	0.0030	7421	12/09/93	
Mercury	0.00020	U	0.00020	7471	12/07/93	
Silver	0.010	U	0.010	6010	12/09/93	
Zinc	0.020	U	0.020	6010	12/09/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-254

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: WATER

	Note	Reporting			Date M	ethod
Test Name	Ref	Result	<u>Limit</u>	Units	Analyzed R	eference
Chromium VI		0.0100	0.010	MG/L	11/19/93 E	PA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-254

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: KPA8240

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/30/93
DILUTION FACTOR: 1.0

UNITS:	UG/L
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		Re	eporting				Reportin	1g
	Result Qua	al	Limit		Result	Qual	Limit	_
Chloromethane	10	**	10	1.0.51.11		_		
		Ŭ	10	1,2-Dichloropropane		5	Ŭ 5	
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U 5	- 1
Vinyl chloride	10	U	10	Trichloroethene		5	Ŭ 5	•
Chloroethane	10	U	10	Chlorodibromomethane		5	บ 5	•
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	υ 5	
Acetone	100	U	100	Benzene		5	ช 5	
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	υ 5	
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		LO	U 10	- 1
1,1-Dichloroethane	5	U	5	Bromoform		5	υ 5	
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U 50	
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U 50	
Chloroform	5	U	5	Tetrachloroethene		5	บ 5	
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	υ 5	
2-Butanone	100	U	100	Toluene		5	U 5	
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U 5	
Carbon tetrachloride	5	υ	5	Ethylbenzene		5	υ 5	
Vinyl acetate	10	ប	10	Styrene		5	U 5	
Dichlorobromomethane	5	Ū	5	Xylenes, total		5	υ 5	

Surrogates	% Recovery	Limits			
TOLUENE-D8	99	88 - 110			
BROMOFLUOROBENZENE	101	86 - 115			
1.2-DICHLOROETHANE-D4	101	76 - 114			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 49 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

EXTRACTION DATE: 11/28/93
ANALYSIS DATE: 12/03/93
DILUTION FACTOR: 1.0

UNITS: U	G/L	R	eporting			F	Reportin
	Result	Qual	Limit		Result	Qual	Limit
Phenol	_		10	0.6.51.11.21.22.2			10
-	_	.0 U		2,6-Dinitrotoluene		.O U	10
bis(2-Chloroethyl)ether		.0 U		3-Nitroaniline	_	.5 U	25
2-Chlorophenol	_	10 U		Acenaphthene		Ο υ	10
1,3-Dichlorobenzene	_	.0 U		2,4-Dinitrophenol	_	5 U	25
1,4-Dichlorobenzene	_	.0 U		4-Nitrophenol	_	5 U	25
Benzyl alcohol		.O U		Dibenzofuran		υ 0.	10
1,2-Dichlorobenzene	_	.ο σ		2,4-Dinitrotoluene	-	.O U	10
2-Methylphenol	-	.O U	10	Diethylphthalate	_	υ 0.	10
bis(2-Chloroisopropyl)		.0 σ	10	4-Chlorophenyl-phenylether		υ 0.	10
4-Methylphenol	_	.0 ס	10	Fluorene	_	υ 0	10
N-Nitroso-di-n-propylar		.0 v		4-Nitroaniline		0 υ	10
Hexachloroethane	_	.0 ע		4,6-Dinitro-2-methylphenol		5 U	25
Nitrobenzene	1	.0 ע	10	N-Nitrosodiphenylamine (1)	1	υ 0	10
Isophorone	1	.0 ע	10	4-Bromophenyl-phenylether	1	υ 0	10
2-Nitrophenol	1	.0 ע	10	Hexachlorobenzene	1	υ 0	10
2,4-Dimethylphenol	1	.0 ע	10	Pentachlorophenol	2	5 Ŭ	25
Benzoic Acid	1	.O U	10	Phenanthrene	1	υ 0.	10
bis(2-Chloroethoxy)metl	hane 1	.0 U	10	Anthracene	1	.O U	10
2,4-Dichlorophenol	1	.O U	10	Di-n-butylphthalate	1	0 U	10
1,2,4-Trichlorobenzene	1	.0 σ	10	Fluoranthene	1	υ 0	10
Naphthalene	1	.O U	10	Pyrene	1	υ 0	10
4-Chloroaniline	1	.0 σ	10	Butylbenzylphthalate	1	0 υ	10
Hexachlorobutadiene	1	.0 U	10	3,3'-Dichlorobenzidine	1	υ 0	10
4-Chloro-3-methylpheno:	1 1	.0 σ	10	Benzo(a)anthracene	1	υ 0	10
2-Methylnaphthalene	1	.O U	10	Chrysene	1	0 υ	10
Hexachlorocyclopentadie	ene 1	.O U	10	bis(2-Ethylhexyl)phthalate	1	0 υ	10
2,4,6-Trichlorophenol	1	.O U	10	Di-n-octylphthalate		0 υ	10
2,4,5-Trichlorophenol	1	.0 ע	10	Benzo(b)fluoranthene	1	0 υ	10
2-Chloronaphthalene	1	.Ο υ	10	Benzo(k)fluoranthene	1	υ 0	10
2-Nitroaniline	2	:5 T	25	Benzo(a)pyrene	1	υ 0	10
Dimethylphthalate	1	.O U	10	Indeno(1,2,3-cd)pyrene	1	0 υ	10
Acenaphthylene	1	.0 U	10	Dibenzo(a,h)anthracene	1	0 υ	10
- <u>-</u>				Benzo(g,h,i)perylene	1		10
				\ J \ \ - E 1	_		

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	67	35 - 114
2-Fluorobiphenyl	82	43 - 116
Terphenyl-D14	51	33 - 141
Phenol-D5	63	10 - 94
2-Fluorophenol	51	21 - 100
2,4,6-Tribromophenol	55	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 51 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

DILUTION FACTOR (6010): 1.00

UNITS: MG/L

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.010	ט	0.010	7060	12/02/93
Aluminum	0.20	U	0.2	6010	12/17/93
Barium	0.20	U	0.2	6010	12/17/93
Beryllium	0.0050	บ	0.005	6010	12/17/93
Cadmium	0.0050	ซ	0.005	6010	12/17/93
Chromium	0.010	บ	0.01	6010	12/17/93
Copper	0.0250	U	0.025	6010	12/17/93
Iron	0.10	U	0.1	6010	12/17/93
Nickel	0.040	Ü	0.04	6010	12/17/93
Lead	0.0030	U	0.0030	7421	12/02/93
Mercury	0.00020	U	0.00020	7471	12/01/93
Silver	0.010	U	0.01	6010	12/17/93
Zinc	0.046		0.02	6010	12/17/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- ${\tt N}$ spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #2

SAMPLE DATE:

SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

·		Re	eporting				Re	eporting
	Result Qua	1	Limit		Result	Qua.	1	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	3.5	J	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	1	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	. 5
Dichlorobromomethane	5	U	5	Xvlenes, total		5	Ū	5

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	100	74 - 121
1,2-DICHLOROETHANE-D4	100	70 - 120

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 53 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

Referenced notes for this work order:

B311254

Prep blank for ICP analysis had zinc level greater than 20ppb PQL. All samples with concentration levels greater than 20ppb were repreped and reanalyzed, except for sample #09C which was non-detect. No blank correction was performed.

Page: 54 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME ICP Metals

TEST CODE 6010

Metals by ICP

Inductively coupled emission spectroscopy according to Method 6010, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

Hazardous Substance List Volatiles

Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance List Extractables Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction followed by GC/MS analysis.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS GF

Arsenic

Graphite Furnace Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes, EPA-600/4-82-055, December 1982.

TEST NAME Chromium VI

TEST CODE CR VI

Chromium VI

Method 7196, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Colorimetric analysis. Equivalent to Standard Methods 3500-Cr D.

TEST NAME Mercury

TEST CODE HG AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption. Method 7470 is used for water.

Page: 55 of 56

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME Mercury

TEST CODE HG AA

Method 245.5-"Technical Additions to Methods for Chemical Analysis of Water and Wastes,"

EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK2

Method not available.

TEST NAME Lead - Graphite Furnace

TEST CODE PB_GF

Lead

EPA 7421, SW-846, Test Methods for Evaluating Solid

Graphite Wastes, Third Edition.

Furnace

EPA 239.2-Technical Additions to Methods for Chemical

Analysis of Water and Wastes, " EPA-600/4-82-055,

December 1982.

TEST NAME ICPES Digestion - Water TEST CODE 23005

Water Digestion

Method 3005A, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Digestion procedure for the preparation of surface and ground water samples for analysis by flame atomic absorption spectroscopy and inductively coupled plasma spectroscopy. The procedure

determines total recoverable or dissolved metals.

TEST NAME GFAA Digestion - Water TEST CODE 23020

Water Digestion

Method 3020, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for

Graphite Furnace.

TEST NAME GFAA Digestion - Soil

TEST CODE 23050F

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-254

TEST NAME GFAA Digestion - Soil TEST CODE 23050F

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for

Graphite Furnace/Flame AA analysis.

TEST NAME ICPES Digestion - Soil TEST CODE 23050P

Soil Digestion Method 305

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for ICPES analysis. Equivalent to Method 3050A, SW-846

Update I, July 1992.



CHAIN OF CUSTODY RECORD* **ANALYSIS REQUEST AND**

Page 1 of 2 Reference Document No. 514076

Sample Team Members? m. wilson, K. Henrington Project Name/No. 1 Tinker 5001 Profit Center No. 3 3527 Samples Shipment Date 7 11 /18 / 93 Lab Destination 8 ITA> Austin

Bill to:5 409832.03

Purchase Order No. 6 4 4 9 8 3 A OO3 Project Manager 4 J. Taylor

Lab Contact 9 Kerman Dens McGray Report to: 10 Tim Jannings
Project Contact/Phone 12 Dens McGray Report to: 10 Tim Jannings
T. T. Awstin

2. Relinquished by (Signature/Affiliation) 3. Relinquished by (Signature/Affiliation) (Signature/Affiliation) Special Instructions: 23 Comments: 29 Normal 4 Turnaround Time Required: 26 Non-hazard _i Possible Hazard Identification: 24 Required Report Date 11 A 1550 A1550 A1549 A155 A1551 **HIS49** A1548 Relinquished by 28 A 1548 Sample ¹⁴ Number Rush: Flammable 🗓 2-64 A - Soil Description/Type Warmed King Sample 15 41548 ms/ms) Skin Irritant Date/Time Collected 三 2 2 1113 1100 1100 1053 00 1053 1100 Time: Date: Time: Date: Date: Time: Poison B 6 MISSO Dueliands of Container Glass ONE CONTAINER PER LINE Туре 800 11/18/53 QC Level: 27 Unknown Li 500m Volume Sample 18 125 m! 200 H 500 M 1mood 25 M 12 5 m (2) 125 M Received by (Signature/Affiliation) 2. Received by (Signature/Affiliation) 1. Received by 28 (/ (Signature/Affiliation) servative **Pre** 19 682 **BNS18** Return to Client Sample Disposal: 25 8270 8270 2012 8270 500c Project Specific (specify) 30 AS Requested Testing 20 0428-20V 200 0hz8 2011 10c-8240 Program 6010/7000 6010/7000 metalo 6010/2000 metals 601017000 824D datad mc to b Disposal by Lab buch 17 Cood 1.19.90 **Condition on** Receipt 2 See KVK Archive 21 Date: Date: Time: Time: Time: Date 11-19-67 0820 Disposal ²² Record No. (mos.)



CHAIN OF CUSTODY RECORD (cont.)* **ANALYSIS REQUEST AND**

Page 2_of Reference Document No.30 314096

Project Name Tinker 500)

Project No. 40983A

Samples Shipment Date 11/18/93

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m (2.5/ £ 6/1///	7	Syac - 8270	Coal	-	abes	11/10/23 1215	Rine Blank	AISSY
8 3 244100 C BB			<u> </u>	HOM	←	4	Trip Blank	A1883
Sccon		DO		25 k			←	A 1552
- 1	Good 100 Sugar	Suac metals	(60)	500m	Sless	عار دولهارا	2-64A Soil	A1552
Disposal 22 S	Condition on 21 Receipt	3 -	Pre-19 servative	Volume 18	Container 17 Type	Date/Time 16 Collected	Sample 15 Description/Type	Sample 14 Number
		PER LINE	CONTAINER I	CONT/	ONE			

Work order : B311254

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
01B						
	Arsenic	B311254-10B	12043050F1	12/04/93	12/09/93	101
	Chromium VI	B311254-10B	1208CR VI1	12/07/93	12/08/93	50.0
	Mercury	B311254-10B	1207HGAA2	12/07/93	12/07/93	149
	Lead	B311254-10B	12043050F1	12/04/93	12/09/93	202

Work order: B311254

Sample ID : A1548-MS

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B						
	Arsenic	B311254-10B	12043050F1	12/04/93	12/09/93	105
	Chromium VI	B311254-10B	1208CR VI1	12/07/93	12/08/93	50.0
	Mercury	B311254-10B	1207HGAA2	12/07/93	12/07/93	167
	Lead	B311254-10B	12043050F1	12/04/93	12/09/93	421

Work order: B311254

Sample ID : A1548-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03B						
	Arsenic	B311254-10B	12043050F1	12/04/93	12/09/93	109
	Chromium VI	B311254-10B	1208CR VI1	12/07/93	12/08/93	50.0
	Mercury	B311254-10B	1207HGAA2	12/07/93	12/07/93	152
	Lead	B311254-10B	12043050F1	12/04/93	12/09/93	435

Work order : B311254

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04B						
	Arsenic	B311254-10B	12043050F1	12/07/93	12/09/93	110
	Chromium VI	B311254-10B	1208CR VI1	12/07/93	12/08/93	50.0
	Mercury	B311254-10B	1207HGAA2	12/04/93	12/07/93	156
	Lead	B311254-10B	12043050F1	12/07/93	12/09/93	110

Work order : B311254

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
05B			- 			
	Arsenic	B311254-10B	12043050F1	12/04/93	12/09/93	106
	Chromium VI	B311254-10B	1208CR VI1	12/07/93	12/08/93	50.0
	Mercury	B311254-10B	1207HGAA2	12/07/93	12/07/93	161
	Lead	B311254-10B	12043050F1	12/04/93	12/09/93	106

Work order : B311254

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
06B						
	Arsenic	B311254-10B	12043050F1	12/04/93	12/09/93	86.2
	Chromium VI	B311254-10B	1208CR VI1	12/07/93	12/08/93	50.0
	Mercury	B311254-10B	1207HGAA2		12/07/93	149
	Lead	B311254-10B	12043050F1	12/04/93	12/09/93	345

Work order: B311254

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
07B						
	Arsenic	B311254-10B	12043050F1	12/04/93	12/09/93	118
	Chromium VI	B311254-10B	1208CR VI1	12/07/93	12/08/93	50.0
	Mercury	B311254-10B	1207HGAA2	12/07/93	12/07/93	159
	Lead	B311254-10B	12043050F1	12/04/93	12/09/93	118

Work order : B311254

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
09C	Lead	B311254-11C	113030201	11/30/93	12/02/93	1.0
09D	Chromium VI	B311254-11D	1119CR_VI1	11/19/93	11/19/93	1.0

Work order : B311254

Sample ID : LAB BLANK #1

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
10B						
	Arsenic	B311254-10B	12043050F1	12/04/93	12/09/93	1.0
	Chromium VI	B311254-10B	1208CR_VI1	12/08/93	12/08/93	1.0
	Mercury	B311254-10B	1207HGAA2	12/07/93	12/07/93	1.0
	Lead	B311254-10B	12043050F1	12/04/93	12/09/93	1.0

Work order : B311254

Sample ID : LAB BLANK #1

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
11c						
	Arsenic	B311254-11C	113030201	11/30/93	12/02/93	1.0
	Mercury	B311254-11C	1201HGAA2	12/01/93	12/01/93	1.0
	Lead	B311254-11C	113030201	11/30/93	12/02/93	1.0
11D	Chromium VI	B311254-11D	1119CR_VI1	11/19/93	11/19/93	1.0

	·		



ANALYTICAL SERVICES



Date: 12/23/93

CERTIFICATE OF ANALYSIS

IT CORPORATION 1250 CAPITAL OF TX HWY BLDG. 3, SUITE 200 AUSTIN, TX 78746-6443 TIM JENNINGS

Work Order: B3-11-255

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O.5001 Date Received: 11/20/93 Number of Samples: 12 Sample Type: SOIL 409832-003-01

I. Introduction

Samples were labeled as follows:

SAMPLE IDENTIFICATION	LABORATORY #
A1555	B3-11-255-01
A1555-MS	B3-11-255-02
A1555-MSD	B3-11-255-03
A1556	B3-11-255-04
2-63A	B3-11-255-05
A1557	B3-11-255-06
A1558	B3-11-255-07
A1559	B3-11-255-08
A1560	B3-11-255-09
LAB BLANK #1	B3-11-255-10
LAB BLANK #2	B3-11-255-11
LAB BLANK #1	B3-11-255-12

Reviewed and Approved:

Jon Bartell

Laboratory Director

Page: 2 of 44

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-11-255

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work 0-2 Work Order: B3-11-255

SAMPLE ID: A1555

SAMPLE DATE: 11/19/93 08:50:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	<u>Limit</u>	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1555

SAMPLE DATE: 11/19/93
SAMPLE MATRIX: SOIL

ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

0N113. 00/ NO		Re	eporting				Re	porting
	Result Qu		Limit		Result	Qual	L	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
	10	บ		trans-1,3-Dichloropropene		5	U	5
Bromomethane		บ	10	Trichloroethene		5	U	5
Vinyl chloride	10	_		Chlorodibromomethane		5	U	5
Chloroethane	10	U				5	U	5
Methylene chloride	7.9	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	6.5	JB		Benzene		•	_	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	3.2	J	100	Toluene		5	U	5
1,1,1-Trichloroethane	3.8	J	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	Ū		Ethylbenzene		5	U	5
Vinyl acetate	10	U		Styrene		5	U	5
Dichlorobromomethane	5	Ū		Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	94	74 - 121
1.2-DICHLOROETHANE-D4	108	70 - 120

Data Qualifier Key:

- U none detected
- ${\tt J}$ estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1555
SAMPLE DATE: 11/19/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Reporting			F	Reportin
Re	esult Qu	al Limit		Result		Limit
Dhana I						
Phenol	0.330	U 0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330	U 0.330	3-Nitroaniline	0.82		0.825
2-Chlorophenol	0.330	U 0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrophenol	0.829	5 U	0.825
1,4-Dichlorobenzene	0.330	U 0.330	4-Nitrophenol	0.825	5 U	0.825
Benzyl alcohol	0.330	U 0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	U 0.330	2,4-Dinitrotoluene	0.330	ט כ	0.330
2-Methylphenol	0.330	U 0.330	Diethylphthalate	0.330	U	0.330
bis(2-Chloroisopropyl)ether	0.330	U 0.330	4-Chlorophenyl-phenylether	0.330	ט כ	0.330
4-Methylphenol	0.330	U 0.330	Fluorene	0.330	U	0.330
N-Nitroso-di-n-propylamine	0.330	บ 0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	U 0.330	4,6-Dinitro-2-methylphenol	0.825	T T	0.825
Nitrobenzene	0.330	U 0.330	N-Nitrosodiphenylamine (1)	0.330	ט (0.330
Isophorone	0.330	บ 0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	บ 0.330	Hexachlorobenzene	0.330	บ (0.330
2,4-Dimethylphenol	0.330	U 0.330	Pentachlorophenol	0.825	U	0.825
Benzoic Acid	0.330	U 0.330	Phenanthrene	0.330	บ (0.330
bis(2-Chloroethoxy)methane	0.330	U 0.330	Anthracene	0.330	υ (0.330
2,4-Dichlorophenol	0.330	U 0.330	Di-n-butylphthalate	1.7		0.330
1,2,4-Trichlorobenzene	0.330	U 0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330	บ 0.330	Pyrene	0.330		0.330
4-Chloroaniline	0.330	ប 0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330	ប 0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330	U 0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330	U 0.330	Chrysene	0.330	_	0.330
Hexachlorocyclopentadiene	0.330	U 0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330	U 0.330	Di-n-octylphthalate	0.330	_	0.330
2,4,5-Trichlorophenol	0.825	U 0.825	Benzo(b)fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330	U 0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825	U 0.825	Benzo(a) pyrene	0.330	-	0.330
Dimethylphthalate	0.330	U 0.330	Indeno(1,2,3-cd)pyrene	0.330	_	0.330
Acenaphthylene	0.330	U 0.330	Dibenzo(a,h)anthracene	0.330		0.330
			Benzo(g,h,i)perylene	0.330		0.330
				0.000	_	

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1555

SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	57	23 - 120				
2-Fluorobiphenyl	57	30 - 115				
Terphenyl-D14	77	18 - 137				
Phenol-D5	62	24 - 113				
2-Fluorophenol	53	25 - 121				
2,4,6-Tribromophenol	67	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 7 of 44

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1555

SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 92.5926

UNITS: MG/KG

						_
	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
Arsenic	3.0	N	1.1	7060	12/09/93	_
Aluminum	11000	*N	19	6010	12/09/93	
Barium	900	*N	19	6010	12/09/93	
Beryllium	1.7		0.46	6010	12/09/93	
Cadmium	0.71		0.46	6010	12/09/93	
Chromium	13	*	0.93	6010	12/09/93	
Copper	9.9	*	2.3	6010	12/09/93	
Iron	15000	*N	9.3	6010	12/09/93	
Nickel	19	*	3.7	6010	12/09/93	
Lead	13	N	1.3	7421	12/09/93	
Mercury	0.023	บ	0.023	7471	12/07/93	
Silver	0.93	ซ	0.93	6010	12/07/93	
Zinc	18	*	1.9	6010	12/09/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Duplicate analysis outside control limits due to matrix interference on aluminum, barium, chromium, copper, iron, nickel and zinc analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

Page: 8 of 44

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-11-255

SAMPLE ID: A1555-MS

SAMPLE DATE: 11/19/93 08:50:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Nethod
Test Name	Ref	Result	<u>Limit</u>	Units	Analyzed	Reference
Chromium VI		97		% REC	12/03/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1555-MS
SAMPLE DATE: 11/19/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93

DILUTION FACTOR: 1.0
UNITS: % REC

	Result				
1,1-Dichloroethene	103	Trichloroethene	82		
		Benzene	97		
		Toluene	96		
<i>'</i>		Chlorobenzene	96		

Surrogates	% Recovery	Limits			
TOLUENE-D8	102	81 - 117			
BROMOFLUOROBENZENE	96	74 - 121			
1,2-DICHLOROETHANE-D4	106	70 - 120			

Data Qualifier Key:

U - none detected

 ${\tt J}$ - estimated value (less than the sample quantitation limit)

B - analyte is found in the associated blank as well as in the sample

'blank' - positive result

* - Surrogate recovery is outside QC limit

D - compound identified at a secondary dilution factor

E - concentration exceeds calibration range

Page: 10 of 44

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1555-MS
SAMPLE DATE: 11/19/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 467.29

UNITS: % REC

	Result	Method Reference	Analysis Date
Arsenic	96	7060	12/09/93
Aluminum	951	6010	12/09/93
Barium	0	6010	12/09/93
Beryllium	92	6010	12/09/93
Cadmium	89	6010	12/09/93
Chromium	90	6010	12/09/93
Copper	83	6010	12/09/93
Iron	231	6010	12/09/93
Nickel	80	6010	12/09/93
Lead	162	7421	12/09/93
Mercury	110	7471	12/07/93
Silver	87	6010	12/09/93
Zinc	90	6010	12/09/93
			, , , -

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

% RPD for matrix spikes outside control limits due to matrix interference on aluminum and iron analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable. Page: 11 of 44

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

SAMPLE ID: A1555-MSD

SAMPLE DATE: 11/19/93 08:50:00

SAMPLE MATRIX: SOIL

	Note	Reporting				te	Method
Test Name	Ref	Result	Limit	Units	Analy	zed	Reference
Chromium VI		90		% REC	12/03	3/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1555-MSD SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 12/02/93 DILUTION FACTOR: 1.0

UNITS: % REC

	Result		
1,1-Dichloroethene	101	Trichloroethene Benzene Toluene Chlorobenzene	Result 82 97 98 98

Surrogates TOLUENE-D8 BROMOFLUOROBENZENE 1,2-DICHLOROETHANE-D4	% Recovery 106 99 108	Limits 81 - 117 74 - 121
	100	/0 - 120

Data Qualifier Key:

U - none detected

J - estimated value (less than the sample quantitation limit)

B - analyte is found in the associated blank as well as in the sample 'blank' - positive result

* - Surrogate recovery is outside QC limit

D - compound identified at a secondary dilution factor

E - concentration exceeds calibration range

Page: 13 of 44

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-255

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1555-MSD SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 96.1538

Result Arsenic Method Analysis Aluminum 67 Barium 1406 Beryllium 7060 0 12/09/93 6010 12/09/93 Cadmium 89 Chromium 6010 12/09/93 87 Copper 6010 97 12/09/93 Iron 6010 86 12/09/93 Nickel 6010 500 12/09/93 Lead 6010 81 12/09/93 Mercury 6010 73 12/09/93 Silver 6010 110 12/09/93 Zinc 7421 84 12/09/93 7471 Data qualifier key: 91 12/07/93 6010 12/09/93 6010 12/09/93

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits S - determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), * - duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL U - none detected

- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

eferenced notes for these results:

Matrix spike duplicate outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES. / LCSD results and method Quality Control were

% RPD for matrix spikes outside control limits due to matrix interference on aluminum and iron analysis by ICPES. LCS /

Page: 14 of 44

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-255

SAMPLE ID: A1556

SAMPLE DATE: 11/19/93 08:55:00

SAMPLE MATRIX: SOIL

	Note		Reporting	Date	Method	
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1556

SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 12/02/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

Chloromethane	Result Q	R ual	eporting Limit		Result	F Qual	Reporting Limit
Bromomethane Vinyl chloride Chloroethane Methylene chloride Acetone Carbon disulfide 1,1-Dichloroethene 1-Dichloroethane crans-1,2-Dichloroethene cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 2-Butanone 1,1,1-Trichloroethane Carbon tetrachloride Vinyl acetate Dichlorobromomethane	10 10 10 5.4 9.1 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	O O O O O O O O O O O O O O O O O O O	10 10 10 10 100 5 5 5 5 5 5 5 5 5 5	1,2-Dichloropropane trans-1,3-Dichloropropene Trichloroethene Chlorodibromomethane 1,1,2-Trichloroethane Benzene cis-1,3-Dichloropropene 2-Chloroethylvinyl ether Bromoform 2-Hexanone 4-Methyl-2-pentanone Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene Ethylbenzene Styrene Xylenes, total	!	5 U U U U U U U U U U U U U U U U U U U	5 5 5

Surrogates TOLUENE-D8	% Recovery	Limits
BROMOFLUOROBENZENE	106 100	81 - 117 74 - 121
1,2-DICHLOROETHANE-D4	109	70 - 121

Data Qualifier Key:

- U none detected
- ${\sf J}$ estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
- - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-11-255

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1556
SAMPLE DATE: 11/19/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			F	Reportin
Res	ult	Qual	Limit		Result	Qual	Limit
	0.330	_	0.330	2,6-Dinitrotoluene	0.330	-	0.330
2	0.330		0.330	3-Nitroaniline	0.82		0.825
	0.330		0.330	Acenaphthene	0.330	-	0.330
•	0.330		0.330	2,4-Dinitrophenol	0.82		0.825
•	0.330	_	0.330	4-Nitrophenol	0.82		0.825
-	0.330		0.330	Dibenzofuran	0.330	-	0.330
•	0.330	U	0.330	2,4-Dinitrotoluene	0.330	_	0.330
2-Methylphenol	0.330	U	0.330	Diethylphthalate	0.330	ט כ	0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U C	0.330
4-Methylphenol	0.330	ט (0.330	Fluorene	0.330	υ (0.330
N-Nitroso-di-n-propylamine	0.330	ט (0.330	4-Nitroaniline	0.82	5 U	0.825
Hexachloroethane	0.330	-	0.330	4,6-Dinitro-2-methylphenol	0.82	5 U	0.825
Nitrobenzene	0.330	U (0.330	N-Nitrosodiphenylamine (1)	0.330) U	0.330
Isophorone	0.330	U (0.330	4-Bromophenyl-phenylether	0.330	U (0.330
2-Nitrophenol	0.330	U (0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	U (0.330	Pentachlorophenol	0.825	5 U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	ט כ	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	υ (0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.34	ŀ	0.330
1,2,4-Trichlorobenzene	0.330	ט (0.330	Fluoranthene	0.330	U (0.330
Naphthalene	0.330	ט כ	0.330	Pyrene	0.330	U (0.330
4-Chloroaniline	0.330	U	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	U	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	ט (0.330	Benzo(a)anthracene	0.330	U (0.330
2-Methylnaphthalene	0.330	ט ט	0.330	Chrysene	0.330	U (0.330
Hexachlorocyclopentadiene	0.330	ט כ	0.330	bis(2-Ethylhexyl)phthalate	0.330	U (0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U (0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b) fluoranthene	0.330) บ	0.330
2-Chloronaphthalene	0.330	ט (0.330	Benzo(k)fluoranthene	0.330	บ (0.330
2-Nitroaniline	0.825	ט פ	0.825	Benzo(a)pyrene	0.330	บ (0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	ט (0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	ט כ	0.330

Page: 17 of 44

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1556 SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	14*	23 - 120			
2-Fluorobiphenyl	15*	30 - 115			
Terphenyl-D14	14*	18 - 137			
Phenol-D5	21	24 - 113			
2-Fluorophenol	18*	25 - 121			
2,4,6-Tribromophenol	16	19 - 122			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Referenced notes for these results:

Sample was re-extracted 12/09/93 and re-analyzed 12/11/93. The surrogate recoveries were within QC limits on the reprep. The original analysis is reported.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1556

SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 96.1538

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.2	UN	1.2	7060	12/09/93
Aluminum	11000	*N	19	6010	12/09/93
Barium	22	*N	19	6010	12/09/93
Beryllium Cadmium	1.4		0.48	6010	12/09/93
Chromium	0.48	U	0.48	6010	12/09/93
Copper	11	*	0.96	6010	12/09/93
Iron	15	*	2.4	6010	12/09/93
Nickel	10000	*N	9.6	6010	12/09/93
Lead	18	*	3.8	6010	12/09/93
Mercury	7.3	N	0.35	7421	12/09/93
Silver	0.025	U	0.025	7471	12/07/93
Zinc	0.96	U	0.96	6010	12/09/93
- 	24	*	1.9	6010	12/09/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order Work Order: B3-11-255

SAMPLE ID: A1557

SAMPLE DATE: 11/19/93 09:20:00

SAMPLE MATRIX: SOIL

Test Name Chromium VI	Note Ref Result 0.500	Unite		Method Reference EPA7196
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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1557 SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 12/03/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

Chloromethane Bromomethane	Result Q	R ual U	eporting Limit 10 10	1,2-Dichloropropane	Result	F Qual 5 U	
Vinyl chloride Chloroethane Methylene chloride Acetone Carbon disulfide 1,1-Dichloroethene 1-Dichloroethane ans-1,2-Dichloroethene Cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 2-Butanone 1,1,1-Trichloroethane Carbon tetrachloride Vinyl acetate	10 10 10 15 5 5 5 5 5 5 5 5 5 5	ם מ מ מ מ מ מ מ נ מ מ מ	10 10 100 5 5 5 5 5 5 5	trans-1,3-Dichloropropene Trichloroethene Chlorodibromomethane 1,1,2-Trichloroethane Benzene cis-1,3-Dichloropropene 2-Chloroethylvinyl ether Bromoform 2-Hexanone 4-Methyl-2-pentanone Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene Ethylbenzene	!	55 U U U U U	5 5 5 5
Dichlorobromomethane	5	Ū		Styrene Xylenes, total	5 5	ט ט	5 5

Surrogates TOLUENE-D8	% Recovery	Limits
BROMOFLUOROBENZENE	104	81 - 117
1,2-DICHLOROETHANE-D4	99	74 - 121
	107	70 - 120

- U none detected
- ${\it J}$ estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
- - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-11-255

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1557 SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93 ANALYSIS DATE: 12/09/93 DILUTION FACTOR: 0.033 UNITS:

UNITS: MG/F	0.033			
MO/ KG		Report :		
Phenol	Result	Reporti Qual Limit	ng	
bis(2-Chloropt)	0.330			Result Oual Tring
2-Chlorophenol	0.330	0.330	2,6-Dini+	Result Qual Limit
1/3-Dichlorope	0.330	0.330	2,6-Dinitrotoluene 3-Nitroaniline	0.330
1,4-Dichlorobenzene Benzyl	0.330	• •••330	Acenaphe	0.330 U 0.330
Benzyl alcohol	0.330	- 0.330	Acenaphthene	0.825 U 0.825
1,2-Dichlorobenzene	0.330	9 0.330	2,4-Dinitrophenol	0.330 U 0.330
2-Methylphenol	0.330	U 0.330	· ····································	0.825 U 0 par
b ?=ch1	0.330	ช 0.330	Dibenzofuran	0.825 II O ear
b ?-Chloroisopropyl)ether	0.330	U 0.330	2,4-Dinitrotoluene	0.330 B 0.330
4. chylphenol N-Nitron		U 0.330	~ -~ - LIIVIDD+ hal	
N-Nitroso-di-n-propylamine Hexachloroethane	0.330	^Ծ 0.330	- CILLOFODhomas	0.04 J 0.330
Hexachloroethane Nitrobenzene	0.330	υ 0.330	Fluorene Fluorene	0 0.336
Isophorone	0.330	υ 0.330	4-Nitroaniline	U. 140
2-Ni+man	0.330	^Ծ 0.330	T/O-Dinitro-2	
2-Nitrophenol	0.330	U 0.330	N-Nitrosodiphenylamine (1)	U D 29F
2,4-Dimethylphenol	0.330	U 0.330	4-Bromophenyl-phenylether Hexachlorober	0 0 222
1	0.330	U 0.330	Hexachlorobenzene	0.330 0.330
>is(2-Chloroethoxy)methane	0.330	υ 0.330	- chedeniorophe-	0.330 U 0.330
,4-Dichlorophenol	0.330	U 0.330	- "CHANTARPA	0.825 U O Bar
'-' Ifichlorobenzo-	0.330	77 0 0-	Anthracene	0.330 B 0 330
	9.330	II O 335	Di-n-butylphthalate	0.330 11 0.330
-Chloroaniline	7.330 j	T 0 335		0.83
*xachlorobutadiene	/•330 _T	7 0 -	Pyrene	0.330 11 0.330
01010-3-mo+1	'•330 _[7 0 - 1	Butylbenzylphthalate	0.330 U 330
Methylnaphthalene 0	•330 m			0.330 0 330
	•330 11			0.330 U 0.330
4,6-Trichlorophenol	.330 T	A =	7 0 E N G	0.330 U 0.330
' Uniopo U.	.330 U	^ ~~	is(2-Ethylhexyl)phthalate	0.330 U 0.330
	025 17	0.825 B	i-n-octylphthalate	0.330 U 0.330
Lerodnijine U.	330 U			0.330 U 0.330
ethylphthalata 0.8	825 U	^ ^ -		0.330 U 0.330
"aphthylene 0.3	330 U			0.330 U 0.330
0.3	330 U	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	deno(1.2 2 (0.330 U 0.330
				0.330 U 0.330
		Be	nzo(g,h,i)perylene	0.330 U 0.330
			0 o	.330 U 0.330
				~ 0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: BPA8270

SAMPLE ID: A1557
SAMPLE DATE: 11/19/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	39	23 - 120
2-Fluorobiphenyl	41	30 - 115
Terphenyl-D14	43	18 - 137
Phenol-D5	46	24 - 113
2-Fluorophenol	39	25 - 121
2,4,6-Tribromophenol	39	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 23 of 44

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1557

SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 116.279

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.2	UN	1.2	7060	12/09/93
Aluminum	12000	*N	23	6010	12/09/93
Barium	110	*N	23	6010	12/09/93
Beryllium	1.9		0.58	6010	12/09/93
Cadmium	0.77		0.58	6010	12/09/93
Chromium	20	*	1.2	6010	12/09/93
Copper	18	*	2.9	6010	12/09/93
Iron	17000	*N	12	6010	12/09/93
Nickel	20	*	4.7	6010	12/09/93
Lead	7.0	N	0.35	7421	12/09/93
Mercury	0.024	ט ט	0.024	7471	12/07/93
Silver	1.2	บ	1.2	6010	12/09/93
Zinc	27	*	2.3	6010	12/09/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- ${\tt N}$ spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Page: 24 of 44

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-11-255

SAMPLE ID: A1558

SAMPLE DATE: 11/19/93 09:33:00

SAMPLE MATRIX: SOIL

	Note	Reporting			Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93 Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX (512) 892-6684 409832-003-01 Work Order: B3-11-255

TEST NAME: Hazardous Substance Vols. METHOD REFERENCE: EPA8240

SAMPLE ID: A1558 SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 12/02/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

7.10			
Bromomethane Vinyl Chlorid	Reporting Result Qual Limit 10 U 10 1,2-Dichler	Report Result Qual Limit	ing
Chloroethane Methylene chloride Methylene chloride Methylene chloride Methylene chloride Methylene chloride Methylene chloride Methylene chloroethene Methylene chloride Methylene chloride Methylene chloride Methylene chloride Methylene chloroethene Met	10 U 10 trans-1,3-Dichloropropene 10 U 10 Trichloroethene 10 U 10 Chlorodibromomethane 110 U 10 I,1,2-Trichloroethane 111	5 U 5 5 U 5	5
Surrogates TOLUENE-D8 BROMOFINS	% Recovery	5 U 5 5 U 5	

Surrogates TOLUENE-D8 BROMOFLUOROBENZENE 1,2-DICHLOROETHANE-D4	% Recovery 98 99	Limits 81 - 117 74 - 121
fier Key:	108	70 - 121

Data Qualifier Key:

U - none detected

J - estimated value (less than the sample quantitation limit)

B - analyte is found in the associated blank as well as in the sample 'blank' - positive result * - Surrogate recovery is outside QC limit

D - compound identified at a secondary dilution factor

E - concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

0.330 U 0.330

(512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1558 SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93 ANALYSIS DATE: 12/09/93 DILUTION FACTOR: 0.033

DILUTION FACTOR: UNITS: MG/KG					
	D	Reporting Qual Limit			
Phenol				Result	Reporting
bis(2-Chloroethyl)ether	0.330	U U 3 411	2 6 74	WEBUIL	Qual Limit
2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzyl alcohol 1,2-Dichlorobenzene 2-Methylphenol (2-Chloroisopropyl)ether iethylphenol	0.330 0.330 0.330 0.330 0.330	U 0.330 U 0.330 U 0.330 U 0.330 U 0.330 U 0.330 U 0.330	2,6-Dinitrotoluene 3-Nitroaniline Acenaphthene 2,4-Dinitrophenol 4-Nitrophenol Dibenzofuran 2,4-Dinitrotoluene Diethylphthalate	0.330 0.825 0.330 0.825 0.825 0.330	U 0.330 U 0.825 U 0.330 U 0.825 U 0.825
N-Nitroso-di-n-propylamine Hexachloroethan	0.330	77 0 222	4-Chlorophenyl-phenylether Fluorene	0.330 0.330	U 0.330 U 0.330

1.3-Dieta	0 220	(0.33		0.33	30 11 0 222
1,3-Dichlorobenzene	0.330	9 0.330		0.82	0.330
-/- Diculoroben	0.330	U 0.330) 2 4 p:	0.33	- 0.025
alcohol	0.330	U 0.330	, Dillicrophenol		- 0.000
1,2-Dichlorobon-	0.330	υ 0.330	T-Nitrophenol	0.82	- 0.023
- Methylphenol	0.330	υ 0.330		0.82	5 U 0.825
(2-Chloroisopropyl)ethe	0.330	υ 0.330	2,4-Dinitrotolyona	0.330	0 0.330
iethylphenol	er 0.330	7 0.330	orecult Duthalato	0.330	U 0.330
N-Nitroso-di	0.330	U 0.330	4-('D 0ma-1;	0.330	υ 0.330
N-Nitroso-di-n-propylamine Hexachloroethane	0.330	U 0.330	Fluorene Fluorene	r 0.330	U 0.330
	0.330	υ 0.330	4-Nitroaniline	0.330	0.330
Nitrobenzene		U 0.330	4.6-Dinitar		0.330
Isophorone	0.330	U 0.330	4,6-Dinitro-2-methylpheno	0.825	0.025
2-Nitrophenol	0.330	υ 0.330		0.330	
2,4-Dimethylphenol	0.330	U 0.330			U 0.330
Denzoic Acid	0.330	U 0.330		0.330	U 0.330
bis(2-Chloroethoxy)methane	0.330	υ 0.330	rentachlorophenol	0.330	ប 0.330
	0.330	U 0.330	rnenanthrene	0.825	U 0.825
-/2/4-Trichloroba-	0.330	υ 0.330	Anthracene	0.330	U 0.330
Fricialene	0.330	U 0.330	Di-n-butylphthalate	0.330	U 0.330
4-Chloroaniline	0.330	U 0.330	ridoranthene	0.76	0.330
Hexachlorobutadiene		U 0.330	Pyrene	0.330	U 0.330
4-Chloro-3	_	U 0.330	Butylbenzylphthele	0.330	U 0.330
4-Chloro-3-methylphenol	• •	υ 0.330	3,3'-Dichlorobenzidine	0.63	0.330
	0	U 0.330	Benzo(a)anthracene	0.330	υ 0.330
Hexachlorocyclopentadiene 2,4,6-Trichloro		U 0.330	Chrysene	0.330	0.330
		U 0.330	bis/2-makes	0.330	U 0.330
-,-/3_11[CU OxOmb-	0.330	0.330	bis(2-Ethylhexyl)phthalate	1.7	υ 0.330
onitoronaphthalass	0.825 t	J 0.825		0.330	0.330
· Microaniline	U.330 t	0.330	Delizo(D)fluorantha-		U 0.330
'imethylphthalato	U.825 U	0.825	DCM2U(K)Iluoranthon-	0.330	U 0.330
.cenaphthylene	0.330 B		JCH2O(d)Dyrene	0.330	U 0.330
	0.330 U	A	Indeno(1,2,3-cd)	0.330	U 0.330
	· ·			0.330	ช 0.330
			Benzo(g,h,i)perylene	0.330	U 0.330
			· - \ Lor l relie	0.330	U 0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1558

SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	58	23 - 120
2-Fluorobiphenyl	62	30 - 115
Terphenyl-D14	74	18 - 137
Phenol-D5	67	24 - 113
2-Fluorophenol	53	
2,4,6-Tribromophenol	61	25 - 121
, -, omopiicitor	91	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-11-255

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1558

SAMPLE DATE: 11/19/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 97.0874

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	0.95	UN	0.95	7060	12/09/93
Aluminum	900	*N	19	6010	12/09/93
Barium	20	*N	19	6010	12/09/93
Beryllium	0.49	ប	0.49	6010	12/09/93
Cadmium	0.49	U	0.49	6010	12/09/93
Chromium	3.9	*	0.97	6010	12/09/93
Copper	2.4	U ≠	2.4	6010	12/09/93
Iron	2800	*N	9.7	6010	12/09/93
Nickel	3.9	บ*	3.9	6010	12/09/93
Lead	0.88	N	0.29	7421	12/09/93
Mercury	0.023	U	0.023	7471	12/07/93
Silver	0.97	U	0.97	6010	12/09/93
Zinc	4.7	*	1.9	6010	12/09/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance</p>
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

SAMPLE ID: A1559

SAMPLE DATE: 11/19/93 09:49:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	<u>Result</u>	<u>Limit</u>	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1559

SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL

ANALYSIS DATE: 12/03/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

•									
	Result	Oua		eporting Limit				Re	porting
Chloromethane				חדווודר		Result	Qua	1	Limit
Bromomethane	_	.0	U U	10	1,2-Dichloropropane		5	U	5
Vinyl chloride Chloroethane		.0	Ū	10 10	trans-1,3-Dichloropropene Trichloroethene		5	U	5
Methylene chloride	_	0	U	10	Chlorodibromomethane		5 5	U U	5 5
Acetone	_	0 7	U J	10 100	1,1,2-Trichloroethane		5	U	5
Carbon disulfide 1,1-Dichloroethene		5	Ū	5	Benzene cis-1,3-Dichloropropene		5 5	U	5
.,1-Dichloroethane		5 5	U U	5 5	2-Chloroethylvinyl ether	1	-	U U	5 10
trans-1,2-Dichloroethene cis-1,2-Dichloroethene	`	5	U	5	Bromoform 2-Hexanone	-	_	U	5
Chloroform	-	5 5	U U	5	4-Methyl-2-pentanone	5 5	_	U U	50 50
1,2-Dichloroethane 2-Butanone			U	5 5	Tetrachloroethene 1,1,2,2-Tetrachloroethane			U	5
1,1,1-Trichloroethane	15		В	100	Toluene	•	_	U U	5 5
Carbon tetrachloride	5		U U	5 5	Chlorobenzene Ethylbenzene	•	5	U	5
Vinyl acetate Dichlorobromomethane	10		IJ	10	Styrene			U U	5 5
	5	•	U	5	Xylenes, total			IJ	5

Surrogates TOLUENE-D8	% Recovery	Limits
BROMOFLUOROBENZENE	104	81 - 117
1,2-DICHLOROETHANE-D4	96	74 - 121
	110	70 - 120

- U none detected
- ${\tt J}$ estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 31 of 44

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-11-255

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1559
SAMPLE DATE: 11/19/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93 ANALYSIS DATE: 12/09/93 DILUTION FACTOR: 0.033

Phenol bis(2-Chloroethyl)eth 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzyl alcohol 1,2-Dichlorobenzene '-Methylphenol is(2-Chloroisopropyl 4-Methylphenol N-Nitroso-di-n-propyl Hexachloroethane Nitrobenzene	er)ether	0.330 0.330 0.330 0.330 0.330 0.330	Qual U U U U U U U U U U U U U U U U U U	eporting Limit 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330	2,6-Dinitrotoluene 3-Nitroaniline Acenaphthene 2,4-Dinitrophenol 4-Nitrophenol Dibenzofuran 2,4-Dinitrotoluene Diethylphthalate 4-Chlorophenyl-phenylether Fluorene 4-Nitroaniline 4,6-Dinitro-2-methylphenol	0.330 0.825 0.330 0.825 0.825 0.330 0.330 0.330 0.330 0.825 0.825	U 0.825 U 0.330 U 0.825 U 0.825 U 0.330 U 0.330 U 0.330 U 0.330 U 0.330 U 0.825 U 0.825
1,4-Dichlorobenzene Benzyl alcohol 1,2-Dichlorobenzene -Methylphenol is(2-Chloroisopropyl 4-Methylphenol N-Nitroso-di-n-propyl Hexachloroethane	amine chane	0.330 0.330 0.330 0.330 0.330 0.330 0.330		0.330 0.300 0.	2,4-Dinitrophenol 4-Nitrophenol Dibenzofuran 2,4-Dinitrotoluene Diethylphthalate 4-Chlorophenyl-phenylether Fluorene 4-Nitroaniline	0.825 0.825 0.330 0.330 0.04 0.330 0.330	U 0.825 U 0.825 U 0.330 U 0.330 J 0.330 U 0.330 U 0.330 U 0.825

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-11-255

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1559 SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	46	23 - 120
2-Fluorobiphenyl	52	30 - 115
Terphenyl-D14	51	18 - 137
Phenol-D5	58	24 - 113
2-Fluorophenol	45	25 - 121
2,4,6-Tribromophenol	62	19 - 121

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- ${\it J}$ estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 33 of 44

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1559

SAMPLE DATE: 11/19/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 113.636

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic Aluminum Barium Beryllium Cadmium Chromium Copper Iron Nickel Lead Mercury Silver Zinc	0.85 1500 23 0.57 0.90 4.0 2.8 3700 4.5 1.2 0.021 1.1	UN *N U*N U* * U* *N U* *N U* U*	0.85 23 23 0.57 0.57 1.1 2.8 11 4.5 0.25 0.021 1.1 2.3	7060 6010 6010 6010 6010 6010 6010 6010	12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: KPA8240

SAMPLE ID: A1560
SAMPLE DATE: 11/16/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/30/93
DILUTION FACTOR: 1.0

UNITS: UG/L

	Reporting			1			Reporting	
	Result	Qual	Limit		Result	Qual	Limit	
Chloromethane		10 τ	10	1,2-Dichloropropane		5	ช 5	
Bromomethane	•	10 t	10	trans-1,3-Dichloropropene		5	υ 5	
Vinyl chloride		10 τ	10	Trichloroethene		5	Ŭ 5	
Chloroethane		10 t	10	Chlorodibromomethane		5	Ŭ 5	
Methylene chloride		10 τ	10	1,1,2-Trichloroethane		5	Ŭ 5	
Acetone	10	າ 00	100	Benzene		5	υ 5	
Carbon disulfide		5 t	5	cis-1,3-Dichloropropene		_	υ 5	
1,1-Dichloroethene		5 t	5	2-Chloroethylvinyl ether		_	บ 10	
1,1-Dichloroethane		5 t	5	Bromoform		5	U 5	
trans-1,2-Dichloroethene		5 t	5	2-Hexanone	!	50	บ 50	
cis-1,2-Dichloroethene		5 U	5	4-Methyl-2-pentanone		50	ช 50	
Chloroform		5 U	5	Tetrachloroethene		5	υ 5	
1,2-Dichloroethane		5 U	5	1,1,2,2-Tetrachloroethane		5	U 5	
2-Butanone	10	00 U	100	Toluene		_	U 5	
1,1,1-Trichloroethane		5 U	5	Chlorobenzene		_	บ 5	
Carbon tetrachloride		5 U	5	Ethylbenzene		_	U 5	
Vinyl acetate		ιο υ	10	Styrene		5	บ 5	
Dichlorobromomethane		5 U	5	Xylenes, total		5	U 5	

Surrogates	% Recovery	Limits			
TOLUENE-D8	97	88 - 110			
BROMOFLUOROBENZENE	101	86 - 115			
1,2-DICHLOROETHANE-D4	103	76 - 114			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-11-255

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: SOIL

	Note	Reporting			Date Method
Test Name	Ref	Result	Limit	Units	Analyzed Reference
Chromium VI		0.0100	0.010	MG/KG	12/03/93 EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-11-255

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1 SAMPLE DATE: not spec SAMPLE MATRIX: SOIL ANALYSIS DATE: 12/02/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

Gh law va	Result Qu	R ual	eporting Limit		Result	F Qual	Reporting Limit
Chloromethane Bromomethane Vinyl chloride Chloroethane Methylene chloride Acetone Carbon disulfide 1,1-Dichloroethene .,1-Dichloroethane trans-1,2-Dichloroethene cis-1,2-Dichloroethene Chloroform 1,2-Dichloroethane 2-Butanone 1,1,1-Trichloroethane Carbon tetrachloride Vinyl acetate Dichlorobromomethane	10 10 10 10 3.5 5 5 5 5 5 5 5 5 5 5 5 5	ם ם ם ם ם ם ם ם ם ם ם ם ם	10 10 10 10 100 5 5 5 5 5 5 5 5 5 5	1,2-Dichloropropane trans-1,3-Dichloropropene Trichloroethene Chlorodibromomethane 1,1,2-Trichloroethane Benzene cis-1,3-Dichloropropene 2-Chloroethylvinyl ether Bromoform 2-Hexanone 4-Methyl-2-pentanone Tetrachloroethene 1,1,2,2-Tetrachloroethane Toluene Chlorobenzene Ethylbenzene Styrene	1 5 5 5 9	5 U U U U U U U U U U U U U U U U U U U	5 5 5 5 5 5 5 5 5 5 5 5
	3	U	5	Xylenes, total	5	ט פ	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	102	81 - 117				
BROMOFLUOROBENZENE	99	74 - 121				
1,2-DICHLOROETHANE-D4	100	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1 SAMPLE DATE: not spec SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/28/93 ANALYSIS DATE: 12/09/93 DILUTION FACTOR: 0.033

Phenol bis(2-Chloroethyl)ether 2-Chlorophenol 1,3-Dichlorobenzene 1,4-Dichlorobenzene Benzyl alcohol 1,2-Dichlorobenzene ^-Methylphenol	0.033 Result 0.330 0.330 0.330 0.330 0.330 0.330	U 0.330 U 0.330 U 0.330 U 0.330 U 0.330	2,6-Dinitrotoluene 3-Nitroaniline Acenaphthene 2,4-Dinitrophenol 4-Nitrophenol Dibenzofuran 2,4-Dinitrotoluene	Result 0.330 0.825 0.330 0.825 0.825 0.330	0.825 0 0.330 0 0.825 0 0.825
Hexachloroethane Nitrobenzene Isophorone 2-Nitrophenol 2,4-Dimethylphenol Benzoic Acid bis(2-Chloroethoxy)methane 2,4-Dichlorophenol 1,2,4-Trichlorobenzene Naphthalene 4-Chloroaniline Hexachlorobutadiene 4-Chloro-3-methylphenol 2-Methylnaphthalene Hexachlorocyclopentadiene 2,4,6-Trichlorophenol 2,4,5-Trichlorophenol 2-Chloronaphthalene 2-Nitroaniline Dimethylphthalate Acenaphthylene	0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330 0.330	U 0.330	4-Nitroaniline 4,6-Dinitro-2-methylphenol N-Nitrosodiphenylamine (1) 4-Bromophenyl-phenylether Hexachlorobenzene Pentachlorophenol Phenanthrene Anthracene Di-n-butylphthalate Fluoranthene Pyrene Butylbenzylphthalate 3,3'-Dichlorobenzidine Benzo(a)anthracene Chrysene bis(2-Ethylhexyl)phthalate Di-n-octylphthalate Benzo(b)fluoranthene Benzo(a)pyrene Indeno(1,2,3-cd)pyrene Dibenzo(a,h)anthracene Benzo(g,h,i)perylene	0.825 0.830 0.330	U 0.825 U 0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	71	23 - 120				
2-Fluorobiphenyl	70	30 - 115				
Terphenyl-D14	77	18 - 137				
Phenol-D5	72	24 - 113				
2-Fluorophenol	60	25 - 121				
2,4,6-Tribromophenol	64	19 - 122				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01

Work Order: B3-11-255

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1 SAMPLE DATE: not spec SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 1.0

UNITS: MG/KG

Arsenic	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Aluminum Barium Beryllium Cadmium Chromium Copper Iron Nickel Lead Mercury Silver Zinc	0.010 0.20 0.20 0.0050 0.0050 0.010 0.025 0.10 0.040 0.0030 0.00020 0.010	ט ט ט ט ט ט ט ט ט	0.010 0.20 0.20 0.0050 0.0050 0.010 0.025 0.10 0.040 0.0030 0.00020 0.010	7060 6010 6010 6010 6010 6010 6010 6010	12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93 12/09/93
Data qualifier key:				6010	12/09/93

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits S - determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance * - duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995 B - < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #2

SAMPLE DATE:

SAMPLE MATRIX: SOIL

ANALYSIS DATE: 12/03/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

·	Result Qual		eporting Limit		Result	Qua		eporting Limit
Chloromethane	10	ט	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	2.8	J	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	99	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/30/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		R	eporting			R	eporting
	Result	Qual	Limit		Result (
Chloromethane	1	.O U	10	1,2-Dichloropropane	5	. U	5
Bromomethane	1	.0 σ	10	trans-1,3-Dichloropropene		•	_
Vinyl chloride	. 1	.0 ປ		Trichloroethene	5	_	_
Chloroethane	1	.0 ע		Chlorodibromomethane	5	•	•
Methylene chloride	1	.0 ช		1,1,2-Trichloroethane	_		
Acetone	10	-		Benzene	5	_	•
Carbon disulfide		5 U		· — —	5	_	•
1,1-Dichloroethene		5 U	_	cis-1,3-Dichloropropene	5	_	•
1,1-Dichloroethane		5 U	•	2-Chloroethylvinyl ether Bromoform	10	_	10
trans-1,2-Dichloroethene		ว บ 5 บ	•		5	•	5
cis-1,2-Dichloroethene		5 U	•	2-Hexanone	50	_	50
Chloroform		•	•	4-Methyl-2-pentanone	50	U	50
1,2-Dichloroethane		5 U	•	Tetrachloroethene	5	ប	5
2-Butanone		5 U	•	1,1,2,2-Tetrachloroethane	5	U	5
	10	_	100	Toluene	5	U	5
1,1,1-Trichloroethane		5 บ	5	Chlorobenzene	5	U	5
Carbon tetrachloride		5 U	5	Ethylbenzene	5	บ	5
Vinyl acetate	10	υ 0	10	Styrene	5	U	5
Dichlorobromomethane	!	5 U	5	Xylenes, total	5	Ū	5

Surrogates	% Recovery	Limits			
TOLUENE-D8	99	88 - 110			
BROMOFLUOROBENZENE	101	86 - 115			
1,2-DICHLOROETHANE-D4	101	76 - 114			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME ICP Metals

TEST CODE 6010

Metals by ICP

Inductively coupled emission spectroscopy according to Method 6010, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

List Volatiles

Hazardous Substance Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance List Extractables

Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction followed by GC/MS analysis.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS GF

Arsenic

Graphite Furnace

Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes, EPA-600/4-82-055, December 1982.

TEST NAME Cation Exchange Capacity TEST CODE CEC A

Cation exchange

Capacity

Part 2: Chemical and microbiological properties method 57-3. American Society of Agronomy, Methods of soil Analysis 2nd Edition.

TEST NAME Chromium VI

TEST CODE CR VI

Chromium VI

Method 7196, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Colorimetric analysis. Equivalent to Standard Methods 3500-Cr D.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-11-255

TEST NAME Grain Size Distriubtion

TEST CODE GRAIN

Method not available.

TEST NAME Mercury

TEST CODE HG_AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption.

Method 7470 is used for water.

Method 245.5-"Technical Additions to Methods for

Chemical Analysis of Water and Wastes,"

EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK2

Method not available.

TEST NAME Moisture Content

TEST CODE MOIS G

Method not available.

TEST NAME Lead - Graphite Furnace

TEST CODE PB_GF

Lead

EPA 7421, SW-846, Test Methods for Evaluating Solid

Graphite

Wastes, Third Edition.

Furnace

EPA 239.2-Technical Additions to Methods for Chemical

Analysis of Water and Wastes, " EPA-600/4-82-055,

December 1982.

TEST NAME Vertical Permeability

TEST CODE V_PERM

Method not available.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-1

TEST NAME GFAA Digestion - Soil

TEST CODE 23050F

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for Graphite Furnace/Flame AA analysis.

TEST NAME ICPES Digestion - Soil

TEST CODE 23050P

Soil Digestion

Method 3050, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for ICPES analysis. Equivalent to Method 3050A, SW-846 Update I, July 1992.

White: To accompany samples 03/255 Reference Document No. 314097 Yellow: Field copy *See back of form for special instructions. Disposal 22 Record No. (mos.) 11-20-53 180 Lab Contact 9 Karmer Denne Project Contact/Phone 12 Dan McCreysor Report to: 10 Tim Jennings Ser. R.S. A. Bill to:5 409832.03 Disposal by Lab 4 Archive H.T. Awstin Date: 2 Time: Date: Time: Date: 11-20 lime: Condition on Page 1 of 2 Receipt 6000 20 6010/2000 6016/2000 6010/2000 9 Pain Size, wanishus, CEC Requested Testing geote chricoli vert K; Project Specific (specify): Metals M CFELL VOC -8240 Sample Disposal: 25 Return to Client VOC. 8240 Carrier/Waybill No. ¹³ F & & 8 460 7.5 55 75 Program ONE CONTAINER PER LINE Ve-8240 Lab Destination 8_ITAS- Austin ANALYSIS Rf JEST AND CHAIN OF CUST JY RECORD* 500c 8220 Samples Shipment Date 7 11/19 /93 8270 Svoc 8270 1. Received by 28 2. Received by (Signature/Affiliation) 3. Received by (Signature/Affiliation) (Signature/Affiliation) **Pre** 19 Servative 700 C001 100 000 7 780 1007 100) Poison B : Unknown | Collected Type Volume Volume Sooml 125 m - 12 " x 6" 1 je 6" liner 500 IN 1 125 m 1/z" × Som ζ_{2} OC Level: 27 125 m 11/19/93 5003 Metal metal 99 2940 19425 Sample Team Members 2 M.W. bon, K. Herrington 11/19/43 OSS 0906 0855 Date: Time: Time: 250 1 Date: Normal - 15 working एडमाड्स Skin Irritant Project Name/No. 1 Tinker Sool Purchase Order No. 6 409832 003 Project Manager 4 그 Tcy lor Sample 15 Description/Type 12-63 B - Soil A1555 3527 A-63A- Sai 2-63A - Soil Possible Hazard Identification: 24 furnaround Time Required: 26 TECHNOLOGY Flammable Profit Center No. 3 Required Report Date 11 ٠ Special Instructions: 23 1. Relinquished by 28 (Signature/Affiliation) Normal 4 Rush Sample 14 Number Relinquished by 3. Relinquished by Non-hazard A1555 A1556 A 1557 A1555 Comments: 29 2-63A A-62 M A1586 A 155 7 (Signature/Affiliation)



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.30 314092 Page 2 of 2

Project Name Tinia 5001

003 Project No. 409832

Samples Shipment Date

	White	e: To a	accon	npany	samp	oles	Yı	ellow:	Field	сору	\angle	<u> </u>	*See	e baci	k of fo	rm fo	rspe	cial in:	structi	ons.	
11/11/193	Disposal 22 Record No.		**** •			B3244100C															
Samples Snipment Date	Condition on 21 Receipt	(9000) 1°C SorkW	Sec. 1	- 300 - 300 - 300						/									7		
S &! ER LINE	Requested Testing 20 Program	540c metals 8210 6010/1000	Voc 8 240		J	Moc Azun	i .												7		
0	Pre-19 servative	100)	-	_	^	7									/	/					;
CONTAINER	Sample 18 Volume	1 W QS 5	125 m l	50m	125 mi	40 m															
ONE	Container ¹⁷	9 (4.53	->		→	→															
	Date/Time ¹⁶ Collected	11/19/93 5933	7	64.60	→	1															
	Sample 15 Description/Type	2-63A - Soil		*	7	Trip Blank/wat															
	Sample 14 Number	A1558	A1558	A1559	A1559	A1560															

Auxiliary Data Summary 12/21/93

Work order : B311255

FRAC	Tests	Blank Reference	Batch Prep ID Date		Analysis Date	Dil. Factor
01B						
	Arsenic	B311255-10B	12043050F1	12/04/93	12/09/93	105
	Chromium VI	B311255-10B	1203CR VI1	12/02/93	12/03/93	50.0
	Mercury	B311255-10B	1207HGAA1	12/07/93	12/07/93	115
	Lead	B311255-10B	12043050F1	12/04/93	12/09/93	421

Work order : B311255

Sample ID : A1555-MS

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B						
	Arsenic	B311255-10B	12043050F1	12/04/93	12/09/93	102
	Chromium VI	B311255-10B	1203CR VI1	12/02/93	12/03/93	50.0
	Mercury	B311255-10B	1207HGAA1	12/07/93	12/07/93	106
	Lead	B311255-10B	12043050F1	12/04/93	12/09/93	408

Work order : B311255

Sample ID : A1555-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03B	Arsenic Chromium VI Mercury Lead	B311255-10B B311255-10B B311255-10B B311255-10B	12043050F1 1203CR_VI1 1207HGAA1 12043050F1	12/04/93 12/02/93 12/07/93 12/04/93	12/03/93 12/07/93	85.5 50.0 132 354

Auxiliary Data Summary

12/21/93

Work order : B311255

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
C M	Arsenic Chromium VI Mercury Mead	B311255-10B B311255-10B B311255-10B B311255-10B	12043050F1 1203CR_VI1 1207HGAA1 12043050F1	12/04/93 12/02/93 12/07/93 12/04/93	12/03/93 12/07/93	115 50.0 123 115

Work order : B311255

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor	
C) Me	rsenic hromium VI ercury ead	B311255-10B B311255-10B B311255-10B B311255-10B	12043050F1 1203CR_VI1 1207HGAA1 12043050F1	12/04/93 12/02/93 12/07/93 12/04/93	12/03/93	118	

Auxiliary Data Summary 12/21/93

Work order : B311255

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
07B						
	Arsenic	B311255-10B	12043050F1	12/04/93	12/09/93	95.2
	Chromium VI	B311255-10B	1203CR VI1	12/03/93	12/03/93	50.0
	Mercury	B311255-10B	1207HGAA1	12/07/93	12/07/93	116
	Lead	B311255-10B	12043050F1	12/04/93	12/09/93	95.2

Auxiliary Data Summary 12/21/93

Work order : B311255

Sample ID : A1559

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor	
08B	Arsenic Chromium VI Mercury Lead	B311255-10B B311255-10B B311255-10B B311255-10B	12043050F1 1203CR_VI1 1207HGAA1 12043050F1	12/04/93 12/02/93 12/07/93 12/04/93	12/03/93 12/07/93	50.0 104	

Work order : B311255

Sample ID : LAB BLANK #1

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
10B	Arsenic Chromium VI Mercury Lead	B311255-10B B311255-10B B311255-10B B311255-10B	12043050F1 1203CR_VI1 1207HGAA1 12043050F1	12/04/93 12/03/93 12/07/93 12/04/93	12/03/93 12/07/93	1.0 1.0 1.0



ANALYTICAL SERVICES

Routed to KK, TL, CF

Date: 12/23/93

12/28/93

CERTIFICATE OF ANALYSIS

IT CORPORATION
1250 CAPITAL OF TX HWY
BLDG. 3, SUITE 200
AUSTIN, TX 78746-6443
TIM JENNINGS

Work Order: B3-11-282

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O.5001
Date Received: 11/23/93
Number of Samples: 19

Sample Type: SOIL

409832-003

I. Introduction

Samples were labeled as follows:

SAMPLE IDENTIFICATION	LABORATORY #
A1561	B3-11-282-01
A1561-MS	B3-11-282-02
A1561-MSD	B3-11-282-03
A1562	B3-11-282-04
J5432	B3-11-282-05
A1563	B3-11-282-06
A1564	B3-11-282-07
A1565	B3-11-282-08
A1566	B3-11-282-09
A1567	B3-11-282-10
A1568	B3-11-282-11
A1569	B3-11-282-12
A1570	B3-11-282-13

Reviewed and Approved:

Jon Bartell

Laboratory Director

Page: 2 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003

(512) 892-6684 Work Order: B3-11-282

Samples, continued from above:

SAMPLE IDENTIFICATION	LABORATORY #
A1571	B3-11-282-14
A1572	B3-11-282-15
A1573	B3-11-282-16
LAB BLANK #1	B3-11-282-17
LAB BLANK #1	B3-11-282-18
LAB BLANK #2	B3-11-282-19

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Page: 3 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-11-282

SAMPLE ID: A1561

SAMPLE DATE: 11/22/93 07:55:00

SAMPLE MATRIX: SOIL

	Note	e Reporting			Date	Method		
Test Name	Ref	Result	<u>Limit</u>	Units	Analyzed	Reference		
Chromium VI	_	0.500	0.50	MG/KG	12/03/93	EPA7196		

409832-003

Page: 4 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1561

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93

DILUTION FACTOR: 1.0

UNITS: UG/KG

		I	Reporting				Re	porting
	Result (Qual	Limit		Result	Qual	L	Limit
Chloromethane	10	τ	J 10	1,2-Dichloropropane		5	U	5
Bromomethane	10) (J 10	trans-1,3-Dichloropropene		5 .	U	5
Vinyl chloride	10) t	J 10	Trichloroethene		5	U	5
Chloroethane	10	τ	J 10	Chlorodibromomethane		5	U	5
Methylene chloride	2.9	9 3	10	1,1,2-Trichloroethane		5	U	5
Acetone	100) (J 100	Benzene		5	U	5
Carbon disulfide	Ę	5 (J 5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	ţ	5 t	J 5	2-Chloroethylvinyl ether	•	10	U	10
1,1-Dichloroethane		5 t	J 5	Bromoform		5	U	5
trans-1,2-Dichloroethene	į	5 t	J 5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	į	5 (J 5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	Ę	5 t	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 t	J 5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100) t	J 100	Toluene		5	U	5
1,1,1-Trichloroethane	3.:	ı s	5	Chlorobenzene		5	U	5
Carbon tetrachloride	1	5 t	J 5	Ethylbenzene		5	U	5
Vinyl acetate	10) t	J 10	Styrene		5	U	5
Dichlorobromomethane	ţ	5 t	J 5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits			
TOLUENE-D8	101	81 - 117			
BROMOFLUOROBENZENE	100	74 - 121			
1,2-DICHLOROETHANE-D4	97	70 - 120			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 5 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: BPA8270

SAMPLE ID: A1561 SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			I	Reporting
Re	esult	Qual	Limit		Result	Qual	Limit
		_	•				
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	U	0.330	3-Nitroaniline	0.825	υ	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	U	0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330	U (0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.330) U	0.330
2-Methylphenol	0.330	υ	0.330	Diethylphthalate	0.330	U	0.330
bis(2-Chloroisopropyl)ether	0.330	υ	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
4-Methylphenol	0.330	υ	0.330	Fluorene	0.330	U (0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	U	0.825
Hexachloroethane	0.330	υ	0.330	4,6-Dinitro-2-methylphenol	0.825	U	0.825
Nitrobenzene	0.330	U	0.330	N-Nitrosodiphenylamine (1)	0.330	U (0.330
Isophorone	0.330	U	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.330	ប	0.330	Hexachlorobenzene	0.330	U	0.330
2,4-Dimethylphenol	0.330	υ	0.330	Pentachlorophenol	0.825	σ	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U	0.330
bis(2-Chloroethoxy)methane	0.330	U	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	U	0.330	Di-n-butylphthalate	0.330	U (0.330
1,2,4-Trichlorobenzene	0.330	ט	0.330	Fluoranthene	0.330	U	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	ט	0.330	Butylbenzylphthalate	0.330	U	0.330
Hexachlorobutadiene	0.330	ט	0.330	3,3'-Dichlorobenzidine	0.330	U	0.330
4-Chloro-3-methylphenol	0.330	ט י	0.330	Benzo(a)anthracene	0.330	U	0.330
2-Methylnaphthalene	0.330	ט י	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	0.330	υ (0.330
2,4,6-Trichlorophenol	0.330	U	0.330	Di-n-octylphthalate	0.330	U	0.330
2,4,5-Trichlorophenol	0.825	σ	0.825	Benzo(b)fluoranthene	0.330	U (0.330
2-Chloronaphthalene	0.330	U	0.330	Benzo(k)fluoranthene	0.330	U	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.330	U	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.330	U	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1561 SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	63	23 - 120
2-Fluorobiphenyl	65	30 - 115
Terphenyl-D14	76	18 - 137
Phenol-D5	63	24 - 113
2-Fluorophenol	52	25 - 121
2,4,6-Tribromophenol	60	19 - 122

409832-003

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 7 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003

(512) 892-6684

Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1561

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 105.263

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date	
Arsenic	1.0		0.86	7060	12/10/93	
Aluminum	11000	*N	21	6010	12/15/93	
Barium	630	*N	21	6010	12/15/93	
Beryllium	0.94		0.53	6010	12/15/93	
Cadmium	0.69		0.53	6010	12/15/93	
Chromium	13	*	1.1	6010	12/15/93	
Copper	9.8	*	2.6	6010	12/15/93	
Iron	11000	*N	11	6010	12/15/93	
Nickel	17	*	4.2	6010	12/15/93	
Lead	5.0	N	0.26	7421	12/10/93	
Mercury	0.025	U	0.025	7471	12/08/93	
Silver	0.41		1.1	6010	12/15/93	
Zinc	22	*	2.1	6010	12/15/93	

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Duplicate analysis outside control limits due to matrix interference on aluminum, barium, chromium, copper, iron, nickel and zinc analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

Page: 8 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-11-282

SAMPLE ID: A1561-MS

SAMPLE DATE: 11/22/93 07:55:00

SAMPLE MATRIX: SOIL

R			Date		Method		
Test Name	Ref	Result	Limit	Units		Analyzed	Reference
Chromium VI		116		% REC		12/03/93	EPA7196

409832-003

Page: 9 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003

74 - 121

70 - 120

(512) 892-6684 Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1561-MS **SAMPLE DATE: 11/22/93** SAMPLE MATRIX: SOIL ANALYSIS DATE: 12/02/93 DILUTION FACTOR: 1.0

UNITS: % REC

	Result			Result
1,1-Dichloroethene	101	Trichloroe	ethene	79
		Benzene		93
		Toluene		94
		Chlorobenz	ene	94
	Surrogates	% Recovery	Limits	
	TOLUENE-D8	102	81 - 117	

Data Qualifier Key:

U - none detected

BROMOFLUOROBENZENE

1,2-DICHLOROETHANE-D4

J - estimated value (less than the sample quantitation limit)

B - analyte is found in the associated blank as well as in the sample

97 99

'blank' - positive result

* - Surrogate recovery is outside QC limit

D - compound identified at a secondary dilution factor

E - concentration exceeds calibration range

Page: 10 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003

(512) 892-6684 Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1561-MS SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93 ANALYSIS DATE: 12/11/93 DILUTION FACTOR: 0.033

UNITS: % REC

Re		Result	
Phenol	63	Acenaphthene	63
2-Chlorophenol	68	4-Nitrophenol	57
1,4-Dichlorobenzene	47	2,4-Dinitrotoluene	62
N-Nitroso-di-n-propylamine	61	Pentachlorophenol	34
1,2,4-Trichlorobenzene	52	Pyrene	86
4-Chloro-3-methylphenol	64		

Surrogates	% Recovery	Limits
Nitrobenzene-D5	51	23 - 120
2-Fluorobiphenyl	61	30 - 115
Terphenyl-D14	67	18 - 137
Phenol-D5	64	24 - 113
2-Fluorophenol	54	25 - 121
2,4,6-Tribromophenol	58	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 11 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1561-MS
SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 83.3333

UNITS: % REC

		Result	=	Method Reference	Analysis ce Date
Arse	enic	100		7060	12/10/93
Alu	ninum	475		6010	12/15/93
Bar.	Lum	0		6010	12/15/93
Ber	/llium	89		6010	12/15/93
Cadi	nium	85		6010	12/15/93
Chr	omium	89		6010	12/15/93
Cop	per	88		6010	12/15/93
Iro	n.	0		6010	12/15/93
Nic	cel	82		6010	12/15/93
Lea	i	210		7421	12/10/93
Mer	cury	115		7471	12/08/93
Sil	•	85		6010	12/15/93
Zin	3	82		6010	12/15/93
					

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA < 0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

% RPD for matrix spikes outside control limits due to matrix interference on barium and iron analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable. Page: 12 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-11-282

SAMPLE ID: A1561-MSD

SAMPLE DATE: 11/22/93 07:55:00

SAMPLE MATRIX: SOIL

	Note		Reporting	Date Method	
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed Reference
Chromium VI		101		% REC	12/03/93 EPA7196

409832-003

Page: 13 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003

(512) 892-6684 Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1561-MSD SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 12/02/93 DILUTION FACTOR: 1.0

UNITS: % REC

	Result		Result
1,1-Dichloroethene	101	Trichloroethene	79
		Benzene	92
		Toluene	94
		Chlorobenzene	93

Surrogates	<pre>% Recovery</pre>	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	97	74 - 121
1,2-DICHLOROETHANE-D4	101	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 14 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1561-MSD SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/11/93
DILUTION FACTOR: 0.033

UNITS: % REC

Re	Result		
Phenol	63	Acenaphthene	69
2-Chlorophenol	68	4-Nitrophenol	49
1,4-Dichlorobenzene	68	2,4-Dinitrotoluene	52
N-Nitroso-di-n-propylamine	60	Pentachlorophenol	34
1,2,4-Trichlorobenzene	68	Pyrene	67
4-Chloro-3-methylphenol	57	-	

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	59	23 - 120			
2-Fluorobiphenyl	71	30 - 115			
Terphenyl-D14	60	18 - 137			
Phenol-D5	61	24 - 113			
2-Fluorophenol	57	25 - 121			
2,4,6-Tribromophenol	47	19 - 122			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 15 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003

(512) 892-6684 Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1561-MSD SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 106.382

UNITS: % REC

	Result	Method Reference	Analysis Date
Arsenic	110	7060	12/10/93
Aluminum	472	6010	12/15/93
Barium	0	6010	12/15/93
Beryllium	88	6010	12/15/93
Cadmium	85	6010	12/15/93
Chromium	90	6010	12/15/93
Copper	88	6010	12/15/93
Iron	154	6010	12/15/93
Nickel	84	6010	12/15/93
Lead	130	7421	12/10/93
Mercury	115	7471	12/08/93
Silver	84	6010	12/15/93
Zinc	83	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA < 0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Referenced notes for these results:

Matrix spike duplicate outside control limits due to matrix interference on aluminum, barium and iron analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

% RPD for matrix spikes outside control limits due to matrix interference on barium and iron analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable. Page: 16 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-11-282

SAMPLE ID: A1562

SAMPLE DATE: 11/22/93 08:04:00

SAMPLE MATRIX: SOIL

	Note	Reporting			Date	Method
Test Name	Ref	Result	Limit	Units	 Analyzed	Reference
Chromium VI		0.50 ʊ	0.50	MG/KG	12/03/93	EPA7196

409832-003

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003

(512) 892-6684 Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1562
SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		R	eporting				Re	porting
	Result Qu		_		Result	Qual		Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	บ	10	Chlorodibromomethane		5	U	5
Methylene chloride	1.9	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	6.8	J	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	บ	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	6.7		5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	_. 5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	<pre>% Recovery</pre>	Limits
TOLUENE-D8	100	81 - 117
BROMOFLUOROBENZENE	98	74 - 121
1,2-DICHLOROETHANE-D4	100	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1562

SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			F	Reportin
Re	sult	Qual	Limit		Result	Qual	Limit
Phenol	0.33		0.330	2,6-Dinitrotoluene	0.33		0.330
bis(2-Chloroethyl)ether	0.33		0.330	3-Nitroaniline	0.82		0.825
2-Chlorophenol	0.33	-	0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.33		0.330	2,4-Dinitrophenol	0.82	-	0.825
1,4-Dichlorobenzene	0.33		0.330	4-Nitrophenol	0.82	_	0.825
Benzyl alcohol	0.33	0 υ	0.330	Dibenzofuran	0.33		0.330
1,2-Dichlorobenzene	0.33	0 υ	0.330	2,4-Dinitrotoluene	0.33		0.330
2-Methylphenol	0.33	0 σ	0.330	Diethylphthalate	0.33		0.330
bis(2-Chloroisopropyl)ether	0.33	0 υ	0.330	4-Chlorophenyl-phenylether			0.330
4-Methylphenol	0.33	υ 0	0.330	Fluorene	0.33		0.330
N-Nitroso-di-n-propylamine	0.33	0 υ	0.330	4-Nitroaniline	0.82	5 U	0.825
Hexachloroethane	0.33	υ 0	0.330	4,6-Dinitro-2-methylphenol	0.82	-	0.825
Nitrobenzene	0.33	0 υ	0.330	N-Nitrosodiphenylamine (1)	0.33	ט כ	0.330
Isophorone	0.33	0 υ	0.330	4-Bromophenyl-phenylether	0.33	ט כ	0.330
2-Nitrophenol	0.33	0 υ	0.330	Hexachlorobenzene	0.33	ט כ	0.330
2,4-Dimethylphenol	0.33	0 υ	0.330	Pentachlorophenol	0.82	5 U	0.825
Benzoic Acid	0.33	0 υ	0.330	Phenanthrene	0.33	U C	0.330
bis(2-Chloroethoxy)methane	0.33	υ 0	0.330	Anthracene	0.33	ט כ	0.330
2,4-Dichlorophenol	0.33	υ 0	0.330	Di-n-butylphthalate	0.33	u c	0.330
1,2,4-Trichlorobenzene	0.33	υ 0	0.330	Fluoranthene	0.33	ט כ	0.330
Naphthalene	0.33	0 υ	0.330	Pyrene	0.33	ט כ	0.330
4-Chloroaniline	0.33	0 υ	0.330	Butylbenzylphthalate	0.33	ט כ	0.330
Hexachlorobutadiene	0.33	0 U	0.330	3,3'-Dichlorobenzidine	0.33	ט כ	0.330
4-Chloro-3-methylphenol	0.33	0 υ	0.330	Benzo(a)anthracene	0.33	ט כ	0.330
2-Methylnaphthalene	0.33	0 υ	0.330	Chrysene	0.33	ט כ	0.330
Hexachlorocyclopentadiene	0.33	υ 0	0.330	bis(2-Ethylhexyl)phthalate	0.33	o c	0.330
2,4,6-Trichlorophenol	0.33	0 υ	0.330	Di-n-octylphthalate	0.33	U C	0.330
2,4,5-Trichlorophenol	0.82		0.825	Benzo(b)fluoranthene	0.33	ט כ	0.330
2-Chloronaphthalene	0.33	0 U	0.330	Benzo(k)fluoranthene	0.33	o u	0.330
2-Nitroaniline	0.82		0.825	Benzo(a)pyrene	0.33	ט כ	0.330
Dimethylphthalate	0.33		0.330	Indeno(1,2,3-cd)pyrene	0.33	υ 0	0.330
Acenaphthylene	0.33		0.330	Dibenzo(a,h)anthracene	0.33	ט כ	0.330
- •				Benzo(g,h,i)perylene	0.33	ט כ	0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1562 SAMPLE DATE: 11/2

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits					
Nitrobenzene-D5	58	23 - 120					
2-Fluorobiphenyl	67	30 - 115					
Terphenyl-D14	76	18 - 137					
Phenol-D5	57	24 - 113					
2-Fluorophenol	49	25 - 121					
2,4,6-Tribromophenol	56	19 - 122					

409832-003

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 20 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1562 SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 95.2380

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
 Arsenic	3.4		0.95	7060	12/10/93
Aluminum	15000	*N	19	6010	12/15/93
Barium	32	*N	19	6010	12/15/93
Beryllium	1.3		0.48	6010	12/15/93
Cadmium	0.48	ប	0.48	6010	12/15/93
Chromium	14	*	0.95	6010	12/15/93
Copper	22	*	2.4	6010	12/15/93
Iron	11000	*N	9.5	6010	12/15/93
Nickel	25	*	3.8	6010	12/15/93
Lead	5.0	N	0.29	7421	12/10/93
Mercury	0.022	บ	0.022	7471	12/08/93
Silver	0.95	U	0.95	6010	12/15/93
Zinc	29	*	1.9	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-11-282

SAMPLE ID: A1563

SAMPLE DATE: 11/22/93 08:25:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1563

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93

DILUTION FACTOR: 1.0

UNITS: UG/KG

		Re	eporting				Re	porting
	Result Qua	1	Limit		Result	Qua:	1	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	2.1	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5.6		5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	101	81 - 117
BROMOFLUOROBENZENE	99	74 - 121
1,2-DICHLOROETHANE-D4	97	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1563

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

DILUTION FACTOR:	0.033	_				,	Reportin
UNITS: MG/KG	5 1		eporting		Result		Limit
	Result	Qual	Limit		REBUIL	Quar	DIMIC
Phenol	0.330	u u	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	Ū	0.330	3-Nitroaniline	0.82	ช ซ	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330) ซ	0.330
1,3-Dichlorobenzene	0.330	υ	0.330	2,4-Dinitrophenol	0.82	5 ប	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.82	5 U	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.33	U	0.330
1,2-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrotoluene	0.33		0.330
2-Methylphenol	0.330) U	0.330	Diethylphthalate	0.33	ט כ	0.330
bis(2-Chloroisopropyl)ethe	er 0.330	U	0.330	4-Chlorophenyl-phenylether		-	0.330
4-Methylphenol	0.330	U	0.330	Fluorene	0.33	U	0.330
N-Nitroso-di-n-propylamine	0.330	U (0.330	4-Nitroaniline	0.82	5 U	0.825
Hexachloroethane	0.330) U	0.330	4,6-Dinitro-2-methylphenol	0.82	-	0.825
Nitrobenzene	0.330) U	0.330	N-Nitrosodiphenylamine (1)	0.33	ט כ	0.330
Isophorone	0.330) U	0.330	4-Bromophenyl-phenylether	0.33		0.330
2-Nitrophenol	0.330	U (0.330	Hexachlorobenzene	0.33	ט כ	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.82	5 U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.33	ט כ	0.330
bis(2-Chloroethoxy)methane	e 0.330	U	0.330	Anthracene	0.33	ט כ	0.330
2,4-Dichlorophenol	0.330) U	0.330	Di-n-butylphthalate	0.33	ט כ	0.330
1,2,4-Trichlorobenzene	0.330) U	0.330	Fluoranthene	0.33	ט כ	0.330
Naphthalene	0.330	U	0.330	Pyrene	0.33	ט כ	0.330
4-Chloroaniline	0.330	υ (0.330	Butylbenzylphthalate	0.33	U	0.330
Hexachlorobutadiene	0.330) U	0.330	3,3'-Dichlorobenzidine	0.33	ט כ	0.330
4-Chloro-3-methylphenol	0.330	U	0.330	Benzo(a)anthracene	0.33	ט כ	0.330
2-Methylnaphthalene	0.330) ซ	0.330	Chrysene	0.33	ט כ	0.330
Hexachlorocyclopentadiene	0.330	U	0.330	bis(2-Ethylhexyl)phthalate	e 0.33	ט כ	0.330
2,4,6-Trichlorophenol	0.330	υ (0.330	Di-n-octylphthalate	0.33	ט כ	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.33	ט כ	0.330
2-Chloronaphthalene	0.330	บ (0.330	Benzo(k)fluoranthene	0.33	ט כ	0.330
2-Nitroaniline	0.825	U	0.825	Benzo(a)pyrene	0.33	ט כ	0.330
Dimethylphthalate	0.330	U	0.330	Indeno(1,2,3-cd)pyrene	0.33	-	0.330
Acenaphthylene	0.330	U	0.330	Dibenzo(a,h)anthracene	0.33		0.330
				Benzo(g,h,i)perylene	0.33	ט כ	0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1563 SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits					
Nitrobenzene-D5	72	23 - 120					
2-Fluorobiphenyl	77	30 - 115					
Terphenyl-D14	79	18 - 137					
Phenol-D5	66	24 - 113					
2-Fluorophenol	54	25 - 121					
2.4.6-Tribromophenol	61	19 - 122					

409832-003

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1563

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 109.890

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
 Arsenic	5.4		1.1	7060	12/10/93
Aluminum	10000	*N	22	6010	12/15/93
Barium	22	U*N	22	6010	12/15/93
Beryllium	1.2		0.55	6010	12/15/93
Cadmium	0.55	U	0.55	6010	12/15/93
Chromium	14	*	1.1	6010	12/15/93
Copper	21	*	2.7	6010	12/15/93
Iron	14000	*N	11	6010	12/15/93
Nickel	21	*	4.4	6010	12/15/93
Lead	7.1	N	0.32	7421	12/10/93
Mercury	0.024	ט	0.024	7471	12/08/93
Silver	1.1	ប	1.1	6010	12/15/93
Zinc	22	*	2.2	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

(512) 892-6684 Work Order: B3-11-282

SAMPLE ID: A1564

SAMPLE DATE: 11/22/93 08:38:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196

409832-003

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001 409832-003 Work Order: B3-11-282

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1564

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

·		1	Reportin	a .			Re	porting
	Result (Qual	Limit		Result	Qual	L	Limit
Chloromethane	10	ο τ	J 10	1,2-Dichloropropane		5	U	5
Bromomethane	10	0 1	J 10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	0 1	J 10	Trichloroethene		5	U	5
Chloroethane	10	0 1	J 10	Chlorodibromomethane		5	U	5
Methylene chloride	2.0	ο ,	J 10	1,1,2-Trichloroethane		5	U	5
Acetone	6.	в .	J 100	Benzene		5	U	5
Carbon disulfide	!	5 1	J 5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	!	5 1	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	:	5 1	ت 5	Bromoform		5	U	5
trans-1,2-Dichloroethene		5 1	U 5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5 1	5	4-Methyl-2-pentanone		50	U	50
Chloroform		5 1	U 5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 1	U 5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	0 1	J 100	Toluene		5	U	5
1,1,1-Trichloroethane	5.	2	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 1	U 5	Ethylbenzene		5	U	5
Vinyl acetate	1	0 1	U 10	Styrene		5	U	5
Dichlorobromomethane		5 1	U 5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits			
TOLUENE-D8	100	81 - 117			
BROMOFLUOROBENZENE	97	74 - 121			
1,2-DICHLOROETHANE-D4	99	70 - 120			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 28 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1564
SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

	.033					_	
UNITS: MG/KG			eporting				Reportin
Re	esult (Qual	Limit		Result	Qual	Limit
Phenol	0 220	**	0 330	2 6-Dimitmetalwana	0.330		0.330
bis(2-Chloroethyl)ether	0.330		0.330	2,6-Dinitrotoluene 3-Nitroaniline	0.825		0.825
2-Chlorophenol	0.330	_	0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.825	_	0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.825		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.330	_	0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.330		0.330
bis(2-Chloroisopropyl)ether	0.330		0.330	4-Chlorophenyl-phenylether			0.330
4-Methylphenol	0.330		0.330	Fluorene	0.330	_	0.330
N-Nitroso-di-n-propylamine	0.330		0.330	4-Nitroaniline	0.825		0.825
Hexachloroethane	0.330		0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.330		0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330		0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.330		0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330		0.330	Pentachlorophenol	0.825		0.825
Benzoic Acid	0.330		0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.330		0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.330		0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330		0.330	Fluoranthene	0.330		0.330
Naphthalene	0.330		0.330	Pyrene	0.330	_	0.330
4-Chloroaniline	0.330		0.330	Butylbenzylphthalate	0.330		0.330
Hexachlorobutadiene	0.330		0.330	3,3'-Dichlorobenzidine	0.330		0.330
4-Chloro-3-methylphenol	0.330		0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.330		0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.330		0.330	bis(2-Ethylhexyl)phthalate			0.330
2,4,6-Trichlorophenol	0.330		0.330	Di-n-octylphthalate	0.330	_	0.330
2,4,5-Trichlorophenol	0.825		0.330	Benzo(b)fluoranthene	0.330		0.330
2-Chloronaphthalene	0.330		0.330	Benzo(k)fluoranthene	0.330		0.330
2-Nitroaniline	0.825		0.825	Benzo(a)pyrene	0.330	_	0.330
Dimethylphthalate	0.330		0.825	Indeno(1,2,3-cd)pyrene	0.330		0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.330		0.330
	0.330	J	0.550	Benzo(g,h,i)perylene	0.330		0.330
				Denzo (G, n, I) per yrene	0.550		5.550

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1564

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

Surrogates '	% Recovery Limi		
Nitrobenzene-D5	50	23 - 120	
2-Fluorobiphenyl	53	30 - 115	
Terphenyl-D14	61	18 - 137	
Phenol-D5	56	24 - 113	
2-Fluorophenol	47	25 - 121	
2,4,6-Tribromophenol	49	19 - 122	

409832-003

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1564

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 105.263

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.2		1.1	7060	12/10/93
Aluminum	1700	*N	21	6010	12/15/93
Barium	21	U*N	21	6010	12/15/93
Beryllium	0.53	ប	0.53	6010	12/15/93
Cadmium	0.57		0.53	6010	12/15/93
Chromium	7.6	*	1.1	6010	12/15/93
Copper	1.7	*	2.6	6010	12/15/93
Iron	7300	*N	11	6010	12/15/93
Nickel	7.3	*	4.2	6010	12/15/93
Lead	3.2	N	0.32	7421	12/10/93
Mercury	0.023	U	0.023	7471	12/08/93
Silver	1.1	U	1.1	6010	12/15/93
Zinc	7.1	*	2.1	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

SAMPLE ID: A1565

SAMPLE DATE: 11/22/93 08:38:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method	
Test Name	Ref	Result	Limit	Units	Analyzed	Reference	
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196	

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1565

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93

DILUTION FACTOR: 1.0

UNITS: UG/KG

20,200		R	eporting				Re	portin
	Result Q	ual	Limit		Result	Qua	1	Limit
Chloromethane	10	υ	10	1,2-Dichloropropane		5	บ	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	2.1	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	5.8	J	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	υ	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	υ	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5.4		5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	υ	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	ט כ	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	100	81 - 117
BROMOFLUOROBENZENE	100	74 - 121
1,2-DICHLOROETHANE-D4	100	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 33 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001 409832-003 Work Order: B3-11-282

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1565

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

UNITS: MG/KG	0.033	ъ.				τ	Reportin
•	esult		eporting Limit		Result		Limit
K	esuic	Qual	TIMIL		Kebuit	Quar	DIME
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330) U	0.330
bis(2-Chloroethyl)ether	0.330	U (0.330	3-Nitroaniline	0.825	រ ប	0.825
2-Chlorophenol	0.330	U	0.330	Acenaphthene	0.330	ט (0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	; U	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.825	j u	0.825
Benzyl alcohol	0.330	U	0.330	Dibenzofuran	0.330) U	0.330
1,2-Dichlorobenzene	0.330	υ (0.330	2,4-Dinitrotoluene	0.330	U (0.330
2-Methylphenol	0.330	ט כ	0.330	Diethylphthalate	0.330	-	0.330
bis(2-Chloroisopropyl)ether	0.330	U	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
4-Methylphenol	0.330	U	0.330	Fluorene	0.330	-	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.825	ט נ	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.825	ט נ	0.825
Nitrobenzene	0.330	U C	0.330	N-Nitrosodiphenylamine (1)	0.330	U	0.330
Isophorone	0.330	υ (0.330	4-Bromophenyl-phenylether	0.330	ט (0.330
2-Nitrophenol	0.330	U	0.330	Hexachlorobenzene	0.330) U	0.330
2,4-Dimethylphenol	0.330	U	0.330	Pentachlorophenol	0.825	; U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	U (0.330
bis(2-Chloroethoxy)methane	0.330	ט כ	0.330	Anthracene	0.330	U	0.330
2,4-Dichlorophenol	0.330	ט כ	0.330	Di-n-butylphthalate	0.330	U (0.330
1,2,4-Trichlorobenzene	0.330	ט כ	0.330	Fluoranthene	0.330) U	0.330
Naphthalene	0.330	ט כ	0.330	Pyrene	0.330) U	0.330
4-Chloroaniline	0.330	ט כ	0.330	Butylbenzylphthalate	0.330) U	0.330
Hexachlorobutadiene	0.330	ט כ	0.330	3,3'-Dichlorobenzídine	0.330) U	0.330
4-Chloro-3-methylphenol	0.330	υ (0.330	Benzo(a)anthracene	0.330	U (0.330
2-Methylnaphthalene	0.330	ט כ	0.330	Chrysene	0.330	U	0.330
Hexachlorocyclopentadiene	0.330	ט כ	0.330	bis(2-Ethylhexyl)phthalate	0.330	ט כ	0.330
2,4,6-Trichlorophenol	0.330	ט כ	0.330	Di-n-octylphthalate	0.330	U (0.330
2,4,5-Trichlorophenol	0.825	5 U	0.825	Benzo(b) fluoranthene	0.330	U	0.330
2-Chloronaphthalene	0.330	ט כ	0.330	Benzo(k)fluoranthene	0.330	ט כ	0.330
2-Nitroaniline	0.825	5 U	0.825	Benzo(a)pyrene	0.330	ט כ	0.330
Dimethylphthalate	0.330	ט כ	0.330	Indeno(1,2,3-cd)pyrene	0.330	ט כ	0.330
Acenaphthylene	0.330	ט כ	0.330	Dibenzo(a,h)anthracene	0.330	U	0.330
				Benzo(g,h,i)perylene	0.330	ט (0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1565

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	52	23 - 120
2-Fluorobiphenyl	59	30 - 115
Terpnenyl-D14	59	18 - 137
Phenol-D5	60	24 - 113
2-Fluorophenol	49	25 - 121
2,4,6-Tribromophenol	51	19 - 122

409832-003

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 35 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1565 SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 107.526

UNITS: MG/KG

	Result	Result Oual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.1	U	1.1	7060	12/10/93
Aluminum	750	*N	22	6010	12/15/93
Barium	60	*N	22	6010	12/15/93
Beryllium	0.54	U	0.54	6010	12/15/93
Cadmium	0.54	บ	0.54	6010	12/15/93
Chromium	3.0	*	1.1	6010	12/15/93
Copper	1.1	*	2.7	6010	12/15/93
Iron	2400	*N	11	6010	12/15/93
Nickel	4.3	Ծ*	4.3	6010	12/15/93
Lead	1.5	N	0.32	7421	12/10/93
Mercury	0.023	ប	0.023	7471	12/08/93
Silver	1.1	ប	1.1	6010	12/15/93
Zinc	3.1	*	2.2	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1566

SAMPLE DATE: 11/16/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/30/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		R	eporting				Re	portin
	Result Qua	ıl	Limit		Result	Qua]	L	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	1	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	98	88 - 110
BROMOFLUOROBENZENE	99	86 - 115
1,2-DICHLOROETHANE-D4	107	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684

Work Order: B3-11-282

SAMPLE ID: A1567

SAMPLE DATE: 11/22/93 16:00:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref_	Result	Limit	Units	Analyzed	Reference
9071/418.1 for TPH		100	10	MG/KG	12/07/93	EPA9071
Chromium VI		0.5 0 U	0.50	MG/KG	12/03/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1567

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

0.1101 00,110		R	eporting				Re	porting
	Result Q	ual	Limit		Result	Qua]	L	Limit
Chloromethane	10	u u	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	บ	10	Trichloroethene		5	U	5
Chloroethane	10	ט (10	Chlorodibromomethane		5	U	5
Methylene chloride	2.1	. J	10	1,1,2-Trichloroethane		5	U	5
Acetone	8.3	J	100	Benzene		5	U	5
Carbon disulfide	5	i t	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	τ	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	τ	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	τ	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	; t	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	5 T	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	5 0	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100) τ	100	Toluene		5	U	5
1,1,1-Trichloroethane	5.4		5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	5 0	5	Ethylbenzene		5	U	5
Vinyl acetate	10) t	10	Styrene		5	U	5
Dichlorobromomethane	5	5 T	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	103	81 - 117
BROMOFLUOROBENZENE	95	74 - 121
1,2-DICHLOROETHANE-D4	102	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1567
SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/10/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	porting			F	Reporti
	sult		Limit		Result		Limit
						_	
Phenol	0.330	ט כ	0.330	2,6-Dinitrotoluene	0.330	U	0.330
bis(2-Chloroethyl)ether	0.330	ט כ	0.330	3-Nitroaníline	0.825	ט פ	0.825
2-Chlorophenol	0.330	ט כ	0.330	Acenaphthene	0.330	ט כ	0.330
1,3-Dichlorobenzene	0.330	ט כ	0.330	2,4-Dinitrophenol	0.825	5 U	0.825
1,4-Dichlorobenzene	0.330	ט כ	0.330	4-Nitrophenol	0.82	U	0.825
Benzyl alcohol	0.330	ט כ	0.330	Dibenzofuran	0.330	U	0.330
1,2-Dichlorobenzene	0.330	ט כ	0.330	2,4-Dinitrotoluene	0.330	ט כ	0.330
2-Methylphenol	0.330	ט כ	0.330	Diethylphthalate	0.330		0.330
bis(2-Chloroisopropyl)ether	0.330	ט כ	0.330	4-Chlorophenyl-phenylether	0.330	U	0.330
4-Methylphenol	0.330	ט כ	0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.330	ט כ	0.330	4-Nitroaniline	0.82		0.825
Hexachloroethane	0.330	ט כ	0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.33	ט כ	0.330	N-Nitrosodiphenylamine (1)	0.330		0.330
Isophorone	0.330	ט כ	0.330	4-Bromophenyl-phenylether	0.330	U	0.330
2-Nitrophenol	0.33	ט כ	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.33	ט כ	0.330	Pentachlorophenol	0.82		0.825
Benzoic Acid	0.33	ט כ	0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.33	υ σ	0.330	Anthracene	0.330	ט כ	0.330
2,4-Dichlorophenol	0.33	ט כ	0.330	Di-n-butylphthalate	0.330	ט כ	0.330
1,2,4-Trichlorobenzene	0.33	υ 0	0.330	Fluoranthene	0.330	ט כ	0.330
Naphthalene	0.33	ט ס	0.330	Pyrene	0.330	ט כ	0.330
4-Chloroaniline	0.33	ט כ	0.330	Butylbenzylphthalate	0.330	ט כ	0.330
Hexachlorobutadiene	0.33	ט ס	0.330	3,3'-Dichlorobenzidine	0.330	ט כ	0.330
4-Chloro-3-methylphenol	0.33	0 U	0.330	Benzo(a)anthracene	0.330		0.330
2-Methylnaphthalene	0.33	U 0	0.330	Chrysene	0.330		0.330
Hexachlorocyclopentadiene	0.33	0 U	0.330	bis(2-Ethylhexyl)phthalate	0.330	ט כ	0.33C
2,4,6-Trichlorophenol	0.33	o u	0.330	Di-n-octylphthalate	0.33		0.330
2,4,5-Trichlorophenol	0.82	5 U	0.825	Benzo(b)fluoranthene	0.33		0.330
2-Chloronaphthalene	0.33	υ 0	0.330	Benzo(k)fluoranthene	0.33		0.330
2-Nitroaniline	0.82		0.825	Benzo(a)pyrene	0.33		0.330
Dimethylphthalate	0.33	υ 0	0.330	Indeno(1,2,3-cd)pyrene	0.33		0.330
Acenaphthylene	0.33	o u	0.330	Dibenzo(a,h)anthracene	0.33		0.330
				Benzo(g,h,i)perylene	0.33	ט כ	0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1567

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits					
Nitrobenzene-D5	51	23 - 120					
2-Fluorobiphenyl	55	30 - 115					
Terphenyl-D14	53	18 - 137					
Phenol-D5	60	24 - 113					
2-Fluorophenol	48	25 - 121					
2,4,6-Tribromophenol	45	19 - 122					

409832-003

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1567

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 108.695

UNITS: MG/KG

		Result	Reporting	Method	Analysis
	Result	Qual	Limit	Reference	Date
Arsenic	1.4		1.2	7060	12/10/93
Aluminum	11000	*N	22	6010	12/15/93
Barium	410	*N	22	6010	12/15/93
Beryllium	1.1		0.54	6010	12/15/93
Cadmium	0.78		0.54	6010	12/15/93
Chromium	15	*	1.1	6010	12/15/93
Copper	7.2	*	2.7	6010	12/15/93
Iron	14000	*N	11	6010	12/15/93
Nickel	15	*	4.3	6010	12/15/93
Lead	6.0	N	0.35	7421	12/10/93
Mercury	0.023	U	0.023	7471	12/08/93
Silver	1.1	U	1.1	6010	12/15/93
Zinc	18	*	2.2	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL .
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

(512) 892-6684 Work Order: B3-11-282

SAMPLE ID: A1568

SAMPLE DATE: 11/22/93 16:23:00

SAMPLE MATRIX: SOIL

Note			Reporting		Date	Method		
Test Name	Ref	Result	<u>Limit</u>	Units	Analyzed	Reference	_	
9071/418.1 for TPH		100	10	MG/KG	12/07/93	EPA9071		
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196		

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1568
SAMPLE DATE: 11/22/93

SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		Re	eporting				Reportin
	Result Qu	al	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U 5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U 5
Vinyl chloride	10	U	10	Trichloroethene		5	υ 5
Chloroethane	10	U	10	Chlorodibromomethane		5	T 5
Methylene chloride	2.1	J	10	1,1,2-Trichloroethane		5	T 5
Acetone	7.0	J	100	Benzene		5	υ 5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	ບ 5
1,1-Dichloroethene	5	บ	5	2-Chloroethylvinyl ether		10	U 10
1,1-Dichloroethane	5	U	5	Bromoform		5	ບ 5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	ບ 50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	บ 50
Chloroform	5	U	5	Tetrachloroethene		5	υ 5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	T 5
2-Butanone	100	U	100	Toluene		5	T 5
1,1,1-Trichloroethane	2.7	J	5	Chlorobenzene		5	T 5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	T 5
Vinyl acetate	10	U	10	Styrene		5	υ 5
Dichlorobromomethane	5	U	5	Xylenes, total		5	Ŭ 5

Surrogates	% Recovery	Limits				
TOLUENE-D8	101	81 - 117				
BROMOFLUOROBENZENE	98	74 - 121				
1.2-DICHLOROETHANE-D4	100	70 - 120				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001 409832-003 Work Order: B3-11-282

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1568

SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/10/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Reporting			F	Reportin
Re	sult Qu	al Limit		Result	Qual	Limit
Photo 1				0.22		
Phenol	0.330	U 0.330	2,6-Dinitrotoluene	0.330		0.330
bis(2-Chloroethyl)ether	0.330	U 0.330	3-Nitroaniline	0.82	_	0.825
2-Chlorophenol	0.330	บ 0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.330	ช 0.330	2,4-Dinitrophenol	0.82	-	0.825
1,4-Dichlorobenzene	0.330	บ 0.330	4-Nitrophenol	0.829	-	0.825
Benzyl alcohol	0.330	บ 0.330	Dibenzofuran	0.330	-	0.330
1,2-Dichlorobenzene	0.330	บ 0.330	2,4-Dinitrotoluene	0.330	-	0.330
2-Methylphenol	0.330	บ 0.330	Diethylphthalate	0.330		0.330
bis(2-Chloroisopropyl)ether	0.330	บ 0.330	4-Chlorophenyl-phenylether		-	0.330
4-Methylphenol	0.330	บ 0.330	Fluorene	0.330	_	0.330
N-Nitroso-di-n-propylamine	0.330	U 0.330	4-Nitroaniline	0.825	-	0.825
Hexachloroethane	0.330	υ 0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.330	บ 0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330	บ 0.330	4-Bromophenyl-phenylether	0.330	ט כ	0.330
2-Nitrophenol	0.330	U 0.330	Hexachlorobenzene	0.330	ט כ	0.330
2,4-Dimethylphenol	0.330	บ 0.330	Pentachlorophenol	0.82	5 U	0.825
Benzoic Acid	0.330	U 0.330	Phenanthrene	0.330	ט כ	0.330
bis(2-Chloroethoxy)methane	0.330	บ 0.330	Anthracene	0.330	U C	0.330
2,4-Dichlorophenol	0.330	U 0.330	Di-n-butylphthalate	0.330	ט כ	0.330
1,2,4-Trichlorobenzene	0.330	U 0.330	Fluoranthene	0.330	ט כ	0.330
Naphthalene	0.330	บ 0.330	Pyrene	0.330	U	0.330
4-Chloroaniline	0.330	U 0.330	Butylbenzylphthalate	0.330	ט כ	0.330
Hexachlorobutadiene	0.330	U 0.330	3,3'-Dichlorobenzidine	0.330	ט כ	0.330
4-Chloro-3-methylphenol	0.330	U 0.330	Benzo(a)anthracene	0.330	ט כ	0.330
2-Methylnaphthalene	0.330	บ 0.330	Chrysene	0.330	ט כ	0.330
Hexachlorocyclopentadiene	0.330	บ 0.330	bis(2-Ethylhexyl)phthalate	0.330	ט כ	0.330
2,4,6-Trichlorophenol	0.330	บ 0.330	Di-n-octylphthalate	0.330	ט כ	0.330
2,4,5-Trichlorophenol	0.825	บ 0.825	Benzo(b)fluoranthene	0.330	ט כ	0.330
2-Chloronaphthalene	0.330	ช 0.330	Benzo(k)fluoranthene	0.330	ט כ	0.330
2-Nitroaniline	0.825	ប 0.825	Benzo(a)pyrene	0.330	ט כ	0.330
Dimethylphthalate	0.330	U 0.330	Indeno(1,2,3-cd)pyrene	0.330	ט כ	0.330
Acenaphthylene	0.330	U 0.330	Dibenzo(a,h)anthracene	0.330	ט כ	0.330
			Benzo(g,h,i)perylene	0.330		0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE D: A1568
SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits					
Nitrobenzene-D5	45	23 - 120					
2-Fluorobiphenyl	52	30 - 115					
Terphenyl-D14	47	18 - 137					
Phenol-D5	47	24 - 113					
2-Fluorophenol	40	25 - 121					
2,4,6-Tribromophenol	40	19 - 122					

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1568
SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 102.040

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	4.7		1.1	7060	12/10/93
Aluminum	12000	*N	20	6010	12/15/93
Barium	190	*N	20	6010	12/15/93
Beryllium	1.2		0.51	6010	12/15/93
Cadmium	0.88		0.51	6010	12/15/93
Chromium	17	*	1.0	6010	12/15/93
Copper	11	*	2.6	6010	12/15/93
Iron	15000	*N	10	6010	12/15/93
Nickel	26	*	4.1	6010	12/15/93
Lead	6.2	N	0.33	7421	12/10/93
Mercury	0.023	U	0.023	7471	12/08/93
Silver	0.56	U	1.0	6010	12/15/93
Zinc	27	*	2.0	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684

Work Order: B3-11-282

SAMPLE ID: A1569

SAMPLE DATE: 11/22/93 16:23:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
9071/418.1 for TPH		100	10	MG/KG	12/07/93	EPA9071
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1569

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		Re	eporting				Re	porting
	Result Qua	1	Limit		Result	Qual	•	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	2.1	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	9.4	J	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	•	10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5.8		5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	99	81 - 117
BROMOFLUOROBENZENE	95	74 - 121
1,2-DICHLOROETHANE-D4	101	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1569
SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/10/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Reporti
Re	sult	Qual	Limit		Result	Qual	Limit
				0.6.01.1	0.330		0.330
Phenol	0.33	-	0.330	2,6-Dinitrotoluene	0.33		0.825
bis(2-Chloroethyl)ether	0.33		0.330	3-Nitroaniline			0.330
2-Chlorophenol	0.33		0.330	Acenaphthene	0.330		
1,3-Dichlorobenzene	0.33		0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.33		0.330	4-Nitrophenol	0.82		0.825
Benzyl alcohol	0.33		0.330	Dibenzofuran	0.330	-	0.330
1,2-Dichlorobenzene	0.33		0.330	2,4-Dinitrotoluene	0.330		0.330
2-Methylphenol	0.33		0.330	Diethylphthalate	0.330		0.330
bis(2-Chloroisopropyl)ether	0.33		0.330	4-Chlorophenyl-phenylether			0.330
4-Methylphenol	0.33	0 U	0.330	Fluorene	0.330		0.330
N-Nitroso-di-n-propylamine	0.33	0 U	0.330	4-Nitroaniline	0.82	_	0.825
Hexachloroethane	0.33	0 U	0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.33	0 U	0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.33	0 U	0.330	4-Bromophenyl-phenylether	0.330		0.330
2-Nitrophenol	0.33	0 U	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.33	0 υ	0.330	Pentachlorophenol	0.82	5 U	0.825
Benzoic Acid	0.33	0 υ	0.330	Phenanthrene	0.330		0.330
bis(2-Chloroethoxy)methane	0.33	0 U	0.330	Anthracene	0.33	ט כ	0.330
2,4-Dichlorophenol	0.33	0 υ	0.330	Di-n-butylphthalate	0.33	ט כ	0.330
1,2,4-Trichlorobenzene	0.33	0 U	0.330	Fluoranthene	0.33		0.330
Naphthalene	0.33	0 υ	0.330	Pyrene	0.33	ט כ	0.330
4-Chloroaniline	0.33	o u	0.330	Butylbenzylphthalate	0.33	ט כ	0.330
Hexachlorobutadiene	0.33	0 υ	0.330	3,3'-Dichlorobenzidine	0.33	ט כ	0.330
4-Chloro-3-methylphenol	0.33	υ 0	0.330	Benzo(a)anthracene	0.33	ט כ	0.330
2-Methylnaphthalene	0.33	0 U	0.330	Chrysene	0.33	ט כ	0.330
Hexachlorocyclopentadiene	0.33	0 υ	0.330	bis(2-Ethylhexyl)phthalate	0.33	ט כ	0.330
2,4,6-Trichlorophenol	0.33	0 υ	0.330	Di-n-octylphthalate	0.33	ט כ	0.330
2,4,5-Trichlorophenol	0.82	5 U	0.825	Benzo(b)fluoranthene	0.33	ט כ	0.330
2-Chloronaphthalene	0.33	0 U	0.330	Benzo(k)fluoranthene	0.33	บ (0.330
2-Nitroaniline	0.82	5 U	0.825	Benzo(a)pyrene	0.33	ט כ	0.330
Dimethylphthalate	0.33		0.330	Indeno(1,2,3-cd)pyrene	0.33	ט כ	0.330
Acenaphthylene	0.33		0.330	Dibenzo(a,h)anthracene	0.33	ס כ	0.330
- -				Benzo(g,h,i)perylene	0.33	ט כ	0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1569

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	45	23 - 120				
2-Fluorobiphenyl	53	30 - 115				
Terphenyl-D14	48	18 - 137				
Phenol-D5	50	24 - 113				
2-Fluorophenol	41	25 - 121				
2,4,6-Tribromophenol	41	19 - 122				

409832-003

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003

(512) 892-6684

Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1569

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 108.695

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	3.7		0.98	7060	12/10/93
Aluminum	10000	*N	22	6010	12/15/93
Barium	22	U*N	22	6010	12/15/93
Beryllium	1.0		0.54	6010	12/15/93
Cadmium	0.59		0.54	6010	12/15/93
Chromium	13	*	1.1	6010	12/15/93
Copper	11	*	2.7	6010	12/15/93
Iron	12000	*N	11	6010	12/15/93
Nickel	23	*	4.3	6010	12/15/93
Lead	5.8	N	0.29	7421	12/10/93
Mercury	0.024	υ	0.024	7471	12/08/93
Silver	0.45		1.1	6010	12/15/93
Zinc	24	*	2.2	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

SAMPLE ID: A1570

SAMPLE DATE: 11/22/93 16:30:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
9071/418.1 for TPH		100	10	MG/KG	12/09/93	EPA9071
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196

409832-003

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1570

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

,		Re	eporting				Re	porting
	Result Qua	1	Limit		Result	Qua]	L	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	2.1	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	7.3	J	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5.1		5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	100	81 - 117
BROMOFLUOROBENZENE	98	74 - 121
1,2-DICHLOROETHANE-D4	100	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 54 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1570
SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/10/93
DILUTION FACTOR: 0.033

UNITS: MG/KG	,.055	Re	porting			Re	eporti
•	esult		Limit		Result	Qual	Limit
Phenol	0.330	U	0.330	2,6-Dinitrotoluene	0.330	ט כ	0.330
bis(2-Chloroethyl)ether	0.330	υ	0.330	3-Nitroaniline	0.825	5 U (0.825
2-Chlorophenol	0.330		0.330	Acenaphthene	0.330	ט ס (0.330
1,3-Dichlorobenzene	0.330	U	0.330	2,4-Dinitrophenol	0.825	5 U (0.825
1,4-Dichlorobenzene	0.330	ט כ	0.330	4-Nitrophenol	0.829	5 U (0.825
Benzyl alcohol	0.330	บ บ	0.330	Dibenzofuran	0.330		0.330
1,2-Dichlorobenzene	0.330	บ (0.330	2,4-Dinitrotoluene	0.330		0.330
2-Methylphenol	0.330	ט כ	0.330	Diethylphthalate	0.330	ט ס	0.330
bis(2-Chloroisopropyl)ether	0.330	ט כ	0.330	4-Chlorophenyl-phenylether	0.330		0.330
4-Methylphenol	0.330	ט כ	0.330	Fluorene	0.330	ט ס (0.330
N-Nitroso-di-n-propylamine	0.330	ט כ	0.330	4-Nitroaniline	0.825		0.825
Hexachloroethane	0.330	ט כ	0.330	4,6-Dinitro-2-methylphenol	0.825	_	0.825
Nitrobenzene	0.330	ט כ	0.330	N-Nitrosodiphenylamine (1)	0.330		0.330
Isophorone	0.330	ט כ	0.330	4-Bromophenyl-phenylether	0.330	ט כ	0.330
2-Nitrophenol	0.330	ט כ	0.330	Hexachlorobenzene	0.330		0.330
2,4-Dimethylphenol	0.330	ט כ	0.330	Pentachlorophenol	0.82	5 υ	0.825
Benzoic Acid	0.330	ט כ	0.330	Phenanthrene	0.330	_	0.330
bis(2-Chloroethoxy)methane	0.330	ט כ	0.330	Anthracene	0.330		0.330
2,4-Dichlorophenol	0.330	ט כ	0.330	Di-n-butylphthalate	0.330		0.330
1,2,4-Trichlorobenzene	0.330	υ σ	0.330	Fluoranthene	0.330	ט כ	0.330
Naphthalene	0.330	ט כ	0.330	Pyrene	0.330	יט כ	0.330
4-Chloroaniline	0.330	ט כ	0.330	Butylbenzylphthalate	0.330	י ט כ	0.330
Hexachlorobutadiene	0.330	υ σ	0.330	3,3'-Dichlorobenzidine	0.330	ט כ	0.330
4-Chloro-3-methylphenol	0.330		0.330	Benzo(a)anthracene	0.330	ט כ	0.330
2-Methylnaphthalene	0.330		0.330	Chrysene	0.330	י ט	0.330
Hexachlorocyclopentadiene	0.330		0.330	bis(2-Ethylhexyl)phthalate	0.330	ט ס	0.330
2,4,6-Trichlorophenol	0.330		0.330	Di-n-octylphthalate	0.330	ט כ	0.330
2,4,5-Trichlorophenol	0.825		0.825	Benzo(b)fluoranthene	0.33	υ 0	0.330
2-Chloronaphthalene	0.330		0.330	Benzo(k)fluoranthene	0.33	U 0	0.330
2-Nitroaniline	0.825		0.825	Benzo(a)pyrene	0.33	U 0	0.330
Dimethylphthalate	0.330		0.330	Indeno(1,2,3-cd)pyrene	0.33	ט ס	0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.33	ס ס	0.330
•				Benzo(g,h,i)perylene	0.33	υ 0	0.330
				13			ľ

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1570

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	47	23 - 120
2-Fluorobiphenyl	52	30 - 115
Terphenyl-D14	47	18 - 137
Phenol-D5	68	24 - 113
2-Fluorophenol	50	25 - 121
2.4.6-Tribromophenol	55	19 - 122

409832-003

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003

(512) 892-6684 Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1570

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 85.4700

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
 Arsenic	2.8		0.97	7060	12/10/93
Aluminum	10000	*N	17	6010	12/15/93
Barium	17	U*N	17	6010	12/15/93
Beryllium	1.2		0.43	6010	12/15/93
Cadmium	1.0		0.43	6010	12/15/93
Chromium	21	*	0.85	6010	12/15/93
Copper	10	*	2.1	6010	12/15/93
Iron	20000	*N	8.5	6010	12/15/93
Nickel	24	*	3.4	6010	12/15/93
Lead	3.8	N	0.29	7421	12/10/93
Mercury	0.022	U	0.022	7471	12/13/93
Silver	0.85	บ	0.85	6010	12/15/93
Zinc	30	*	1.7	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

SAMPLE ID: A1571

SAMPLE DATE: 11/22/93 16:48:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method	
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference	
9071/418.1 for TPH		100	10	MG/KG	12/07/93	EPA9071	
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196	

409832-003

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1571

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

23,33		F	eporting				Rep	porting
	Result (Qual	Limit		Result	Qual	LI	Limit
Chloromethane	10	ט ט	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	ס נ	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	0 0	10	Trichloroethene		5	U	5
Chloroethane	10	ט כ	10	Chlorodibromomethane		5	U	5
Methylene chloride	2.:	2 J	10	1,1,2-Trichloroethane		5	U	5
Acetone	6.3	2 J	190	Benzene		5	U	5
Carbon disulfide	!	5 t	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	!	5 t	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	!	5 t	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	!	5 t	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	!	5 t	5	4-Methyl-2-pentanone		50	U	50
Chloroform	!	5 t	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	!	5 t	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	ס נ	100	Toluene		5	U	5
1,1,1-Trichloroethane	5.3	2	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 t	r 5	Ethylbenzene		5	U	5
Vinyl acetate	10	0 τ	10	Styrene		5	U	5
Dichlorobromomethane	:	5 t	7 5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	100	81 - 117
BROMOFLUOROBENZENE	100	74 - 121
1.2-DICHLOROETHANE-D4	100	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1571
SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/11/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			F	Reporti
Re	sult	Qual	Limit		Result	Qual	Limit
			•			_	
Phenol	0.330		0.330	2,6-Dinitrotoluene	0.330	_	0.330
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline	0.82	-	0.825
2-Chlorophenol	0.330	-	0.330	Acenaphthene	0.330	_	0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.82	-	0.825
1,4-Dichlorobenzene	0.330	U	0.330	4-Nitrophenol	0.82		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.330	-	0.330
1,2-Dichlorobenzene	0.330	U (0.330	2,4-Dinitrotoluene	0.330		0.330
2-Methylphenol	0.330	ט כ	0.330	Diethylphthalate	0.330	ט כ	0.330
bis(2-Chloroisopropyl)ether	0.330	U (0.330	4-Chlorophenyl-phenylether	0.330	ט כ	0.330
4-Methylphenol	0.330	U (0.330	Fluorene	0.330	ט כ	0.330
N-Nitroso-di-n-propylamine	0.330	U	0.330	4-Nitroaniline	0.82	5 U	0.825
Hexachloroethane	0.330	U	0.330	4,6-Dinitro-2-methylphenol	0.82	5 U	0.825
Nitrobenzene	0.330	υ (0.330	N-Nitrosodiphenylamine (1)	0.330	ט כ	0.330
Isophorone	0.330	ט כ	0.330	4-Bromophenyl-phenylether	0.330	ט כ	0.330
2-Nitrophenol	0.330	υ (0.330	Hexachlorobenzene	0.330	ט כ	0.330
2,4-Dimethylphenol	0.330	ט כ	0.330	Pentachlorophenol	0.82	5 U	0.825
Benzoic Acid	0.330	U	0.330	Phenanthrene	0.330	ט כ	0.330
bis(2-Chloroethoxy)methane	0.330	υ (0.330	Anthracene	0.330	ט כ	0.330
2,4-Dichlorophenol	0.330	ט כ	0.330	Di-n-butylphthalate	0.330	ט כ	0.330
1,2,4-Trichlorobenzene	0.330	ט כ	0.330	Fluoranthene	0.330	ט כ	0.330
Naphthalene	0.330	ט כ	0.330	Pyrene	0.330	ט כ	0.330
4-Chloroaniline	0.330	ט כ	0.330	Butylbenzylphthalate	0.330	ט כ	0.330
Hexachlorobutadiene	0.330	ט כ	0.330	3,3'-Dichlorobenzidine	0.330	ט כ	0.330
4-Chloro-3-methylphenol	0.330	ט כ	0.330	Benzo(a)anthracene	0.330	ט כ	0.330
2-Methylnaphthalene	0.330	ט כ	0.330	Chrysene	0.330	ט כ	0.330
Hexachlorocyclopentadiene	0.330	ט כ	0.330	bis(2-Ethylhexyl)phthalate	0.330	ט כ	0.330
2,4,6-Trichlorophenol	0.330	ט כ	0.330	Di-n-octylphthalate	0.33	ט כ	0.330
2,4,5-Trichlorophenol	0.825	U	0.825	Benzo(b)fluoranthene	0.330	υ σ	0.330
2-Chloronaphthalene	0.330	ט כ	0.330	Benzo(k)fluoranthene	0.330	ט כ	0.330
2-Nitroaniline	0.825	5 U	0.825	Benzo(a)pyrene	0.330	ט כ	0.330
Dimethylphthalate	0.330	ט כ	0.330	Indeno(1,2,3-cd)pyrene	0.330	ט כ	0.330
Acenaphthylene	0.330	ט כ	0.330	Dibenzo(a,h)anthracene	0.330	ט כ	0.330
				Benzo(g,h,i)perylene	0.330	U	0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1571

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	52	23 - 120
2-Fluorobiphenyl	66	30 - 115
Terphenyl-D14	66	18 - 137
Phenol-D5	59	24 - 113
2-Fluorophenol	52	25 - 121
2.4.6-Tribromophenol	55	19 - 122

409832-003

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{\mathtt{B}}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 61 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1571
SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 102.040

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	5.5		0.89	7060	12/10/93
Aluminum	15000	*N	20	6010	12/15/93
Barium	18	*N	20	6010	12/15/93
Beryllium	1.5		0.51	6010	12/15/93
Cadmium	0.95		0.51	6010	12/15/93
Chromium	17	*	1.0	6010	12/15/93
Copper	16	*	2.6	6010	12/15/93
Iron	13000	*N	10	6010	12/15/93
Nickel	28	*	4.1	6010	12/15/93
Lead	9.9	N	1.1	7421	12/10/93
Mercury	0.026	U	0.026	7471	12/08/93
Silver	1.0	U	1.0	6010	12/15/93
Zinc	32	*	2.0	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

SAMPLE ID: A1572

SAMPLE DATE: 11/22/93 16:58:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method	
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference	
9071/418.1 for TPH		100	10	MG/KG	12/07/93	EPA9071	
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196	

409832-003

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1572

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 1.0

UNITS: UG/KG

		P	eporting				Re	portin
	Result	Qual	Limit		Result	Qua.	1	Limit
Chloromethane	1	o u	10	1,2-Dichloropropane		5	บ	5
Bromomethane	1	0 0	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	0 υ	10	Trichloroethene		5	U	5
Chloroethane	1	o u	10	Chlorodibromomethane		5	U	5
Methylene chloride	2.	1 J	10	1,1,2-Trichloroethane		5	U	5
Acetone	6.	1 5	100	Benzene		5	U	5
Carbon disulfide		5 U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane		5 U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene		5 U	5	2-Hexanone	!	50	Ū	50
cis-1,2-Dichloroethene		5 U	5	4-Methyl-2-pentanone		50	U	50
Chloroform		5 U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	υ 0	100	Toluene		5	U	5
1,1,1-Trichloroethane	5.	3	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 U	5	Ethylbenzene		5	U	5
Vinyl acetate	1	0 υ	10	Styrene		5	U	5
Dichlorobromomethane		5 U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	100	81 - 117
BROMOFLUOROBENZENE	98	74 - 121
1,2-DICHLOROETHANE-D4	102	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 64 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1572 SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/10/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			1	Reporti
	Result	Qual	Limit		Result	Qual	Limit
Phenol	0.33	-	0.330	2,6-Dinitrotoluene	0.330	-	0.330
bis(2-Chloroethyl)ether	0.33		0.330	3-Nitroaniline	0.82	-	0.825
2-Chlorophenol	0.33		0.330	Acenaphthene	0.330		0.330
1,3-Dichlorobenzene	0.33		0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.33		0.330	4-Nitrophenol	0.82		0.825
Benzyl alcohol	0.33		0.330	Dibenzofuran	0.33		0.330
1,2-Dichlorobenzene	0.33		0.330	2,4-Dinitrotoluene	0.33		0.330
2-Methylphenol	0.33		0.330	Diethylphthalate	0.330		0.330
bis(2-Chloroisopropyl)ethe	er 0.33	ט כ	0.330	4-Chlorophenyl-phenylether			0.330
4-Methylphenol	0.33		0.330	Fluorene	0.330	ט כ	0.330
N-Nitroso-di-n-propylamine	e 0.33	ט כ	0.330	4-Nitroaniline	0.82	_	0.825
Hexachloroethane	0.33	ט כ	0.330	4,6-Dinitro-2-methylphenol	0.82	5 U	0.825
Nitrobenzene	0.33	ט כ	0.330	N-Nitrosodiphenylamine (1)	0.33	ט כ	0.330
Isophorone	0.33	ט כ	0.330	4-Bromophenyl-phenylether	0.33	ט כ	0.330
2-Nitrophenol	0.33	ט כ	0.330	Hexachlorobenzene	0.33	ט כ	0.330
2,4-Dimethylphenol	0.33	ט כ	0.330	Pentachlorophenol	0.82	5 U	0.825
Benzoic Acid	0.33	ט כ	0.330	Phenanthrene	0.33	ט כ	0.330
bis(2-Chloroethoxy)methane	e 0.33	ט כ	0.330	Anthracene	0.33	ט כ	0.330
2,4-Dichlorophenol	0.33	ט כ	0.330	Di-n-butylphthalate	0.33	ט כ	0.330
1,2,4-Trichlorobenzene	0.33	ט כ	0.330	Fluoranthene	0.33	ט כ	0.330
Naphthalene	0.33	ט כ	0.330	Pyrene	0.33	ט כ	0.330
4-Chloroaniline	0.33	ט כ	0.330	Butylbenzylphthalate	0.330	ט כ	0.330
Hexachlorobutadiene	0.33	ט כ	0.330	3,3'-Dichlorobenzidine	0.330	ט כ	0.330
4-Chloro-3-methylphenol	0.33	ט כ	0.330	Benzo(a)anthracene	0.33	ט כ	0.330
2-Methylnaphthalene	0.33	U C	0.330	Chrysene	0.33	ט כ	0.330
Hexachlorocyclopentadiene	0.33	ט כ	0.330	bis(2-Ethylhexyl)phthalate	0.33	ט כ	0.330
2,4,6-Trichlorophenol	0.33	ט כ	0.330	Di-n-octylphthalate	0.33	ט כ	0.330
2,4,5-Trichlorophenol	0.82	5 U	0.825	Benzo(b)fluoranthene	0.33	υ σ	0.330
2-Chloronaphthalene	0.33	ט כ	0.330	Benzo(k)fluoranthene	0.33	ט כ	0.330
2-Nitroaniline	0.82	5 ซ	0.825	Benzo(a)pyrene	0.33	ט כ	0.330
Dimethylphthalate	0.33	ט כ	0.330	Indeno(1,2,3-cd)pyrene	0.33	ט כ	0.330
Acenaphthylene	0.33	ט כ	0.330	Dibenzo(a,h)anthracene	0.33	ט כ	0.330
				Benzo(g,h,i)perylene	0.33	ט כ	0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1572

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	41	23 - 120
2-Fluorobiphenyl	47	30 - 115
Terphenyl-D14	58	18 - 137
Phenol-D5	68	24 - 113
2-Fluorophenol	47	25 - 121
2,4,6-Tribromcphenol	55	19 - 122

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 66 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1572 SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 102.040

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	2.6		1.1	7060	12/10/93
Aluminum	9700	*N	20	6010	12/15/93
Barium	25	*N	20	6010	12/15/93
Beryllium	1.2		0.51	6010	12/15/93
Cadmium	0.51	υ	0.51	6010	12/15/93
Chromium	14	*	1.0	6010	12/15/93
Copper	16	*	2.6	6010	12/15/93
Iron	14000	*N	10	6010	12/15/93
Nickel	21	*	4.1	6010	12/15/93
Lead	5.0	N	0.33	7421	12/10/93
Mercury	0.023	U	0.023	7471	12/08/93
Silver	1.0	U	1.0	6010	12/15/93
Zinc	22	*	2.0	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA < 0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684

Work Order: B3-11-282

SAMPLE ID: A1573

SAMPLE DATE: 11/22/93 17:15:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference
9071/418.1 for TPH		100	10	MG/KG	12/07/93	EPA9071
Chromium VI		0.500	0.50	MG/KG	12/03/93	EPA7196

409832-003

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1573

SAMPLE DATE: 11/22/93 SAMPLE MATRIX: SOIL ANALYSIS DATE: 12/02/93 DILUTION FACTOR: 1.0

UNITS: UG/KG

			Reporting				R€	eporting
	Result	Qual	Limit		Result	Qua	1	Limit
Chloromethane	:	10	U 10	1,2-Dichloropropane		5	U	5
Bromomethane		10	U 10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	:	10	U 10	Trichloroethene		5	U	5
Chloroethane		10	U 10	Chlorodibromomethane		5	U	5
Methylene chloride	2	. 0	J 10	1,1,2-Trichloroethane		5	U	5
Acetone	5	. 7	J 100	Benzene		5	U	5
Carbon disulfide		5	y 5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5	U 5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane		5	U 5	Bromoform		5	U	5
trans-1,2-Dichloroethene		5	J 5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5	J 5	4-Methyl-2-pentanone	!	50	U	50
Chloroform		5	J 5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	J 5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	00	J 100	Toluene		5	U	5
1,1,1-Trichloroethane	5.	. 6	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	J 5	Ethylbenzene		5	U	5
Vinyl acetate		LO 1	J 10	Styrene		5	U	5
Dichlorobromomethane		5	J 5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	98	81 - 117
BROMOFLUOROBENZENE	99	74 - 121
1,2-DICHLOROETHANE-D4	100	70 - 120

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1573
SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/10/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Reporti
Re	sult	Qual	Limit		Result	Qual	Limit
						_	
Phenol	0.33		0.330	2,6-Dinitrotoluene	0.33	-	0.330
bis(2-Chloroethyl)ether	0.33		0.330	3-Nitroaniline	0.82		0.825
2-Chlorophenol	0.33	_	0.330	Acenaphthene	0.33		0.330
1,3-Dichlorobenzene	0.33		0.330	2,4-Dinitrophenol	0.82	-	0.825
1,4-Dichlorobenzene	0.33	ט כ	0.330	4-Nitrophenol	0.82	_	0.825
Benzyl alcohol	0.33		0.330	Dibenzofuran	0.33		0.330
1,2-Dichlorobenzene	0.33	ט כ	C.330	2,4-Dinitrotoluene	0.33	_	0.330
2-Methylphenol	0.33	ט כ	0.330	Diethylphthalate	0.33		0.330
bis(2-Chloroisopropyl)ether	0.33	ט כ	0.330	4-Chlorophenyl-phenylether	0.33	-	0.330
4-Methylphenol	0.33	ט כ	0.330	Fluorene	0.33	0 U	0.330
N-Nitroso-di-n-propylamine	0.33	ט כ	0.330	4-Nitroaniline	0.82	5 U	0.825
Hexachloroethane	0.33	ט כ	0.330	4,6-Dinitro-2-methylphenol	0.82	5 U	0.825
Nitrobenzene	0.33	ט כ	0.330	N-Nitrosodiphenylamine (1)	0.33	υ 0	0.330
Isophorone	0.33	ט כ	0.330	4-Bromophenyl-phenylether	0.33	υ 0	0.330
2-Nitrophenol	0.33	ט כ	0.330	Hexachlorobenzene	0.33	υ 0	0.330
2,4-Dimethylphenol	0.33	ט כ	0.330	Pentachlorophenol	0.82	5 U	0.825
Benzoic Acid	0.33	ט כ	0.330	Phenanthrene	0.33	υ 0	0.330
bis(2-Chloroethoxy)methane	0.33	ט כ	0.330	Anthracene	0.33	υ 0	0.330
2,4-Dichlorophenol	0.33	ט כ	0.330	Di-n-butylphthalate	0.33	0 σ	0.330
1,2,4-Trichlorobenzene	0.33	ט כ	0.330	Fluoranthene	0.33	υ 0	0.330
Naphthalene	0.33	ט כ	0.330	Pyrene	0.33	0 U	0.330
4-Chloroaniline	0.33	ט כ	0.330	Butylbenzylphthalate	0.33	U 0	0.330
Hexachlorobutadiene	0.33	υ c	0.330	3,3'-Dichlorobenzidine	0.33	U 0	0.330
4-Chloro-3-methylphenol	0.33	υ σ	0.330	Benzo(a)anthracene	0.33	υ 0	0.330
2-Methylnaphthalene	0.33	υ c	0.330	Chrysene	0.33	υ 0	0.330
Hexachlorocyclopentadiene	0.33	ט כ	0.330	bis(2-Ethylhexyl)phthalate	0.33	0 U	0.330
2,4,6-Trichlorophenol	0.33	U	0.330	Di-n-octylphthalate	0.33	0 υ	0.330
2,4,5-Trichlorophenol	0.82	5 U	0.825	Benzo(b)fluoranthene	0.33	0 U	0.330
2-Chloronaphthalene	0.33	ט כ	0.330	Benzo(k)fluoranthene	0.33	0 U	0.330
2-Nitroaniline	0.82	5 U	0.825	Benzo(a)pyrene	0.33	o u	0.330
Dimethylphthalate	0.33	υ σ	0.330	Indeno(1,2,3-cd)pyrene	0.33	o u	0.330
Acenaphthylene	0.33	ט כ	0.330	Dibenzo(a,h)anthracene	0.33	0 υ	0.330
				Benzo(g,h,i)perylene	0.33	ο σ	0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1573

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	41	23 - 120
2-Fluorobiphenyl	46	30 - 115
Terphenyl-D14	68	18 - 137
Phenol-D5	54	24 - 113
2-Fluorophenol	43	25 - 121
2,4,6-Tribromcphenol	58	19 - 122

409832-003

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1573

SAMPLE DATE: 11/22/93
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 85.4700

UNITS: MG/KG

	Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Arsenic	1.1	ŭ	1.1	7060	12/10/93
Aluminum	1500	*N	17	6010	12/15/93
Barium	17	U*N	17	6010	12/15/93
Beryllium	0.43	U	0.43	6010	12/15/93
Cadmium	0.58		0.43	6010	12/15/93
Chromium	7.3	*	0.85	6010	12/15/93
Copper	2.1	U *	2.1	6010	12/15/93
Iron	6100	*N	8.5	6010	12/15/93
Nickel	5.1	*	3.4	6010	12/15/93
Lead	1.9	N	0.32	7421	12/10/93
Mercury	0.024	ט	0.024	7471	12/08/93
Silver	0.85	U	0.85	6010	12/15/93
Zinc	5.9	*	1.7	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

Page: 72 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: SOIL

	Note		Reporting		Date Method	
Test Name	Ref	Result	Limit	Units	Analyzed Reference	
9071/418.1 for TPH		100	10	MG/KG	12/07/93 EPA9071	
Chromium VI		0.0100	0.010	MG/KG	12/03/93 EPA7196	

409832-003

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Or

Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/02/93
DILUTION FACTOR: 1.0
UNITS: UG/KG

·		R	eporting				Re	portin
	Result	Qual	Limit		Result	Qual	L	Limit
Chloromethane	1	ο υ	10	1,2-Dichloropropane		5	U	5
Bromomethane	1	ο υ	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	ο υ	10	Trichloroethene		5	U	5
Chloroethane	1	ο υ	10	Chlorodibromomethane		5	U	5
Methylene chloride	1	ο υ	10	1,1,2-Trichloroethane		5	U	5
Acetone	10	0 U	100	Benzene		5	U	5
Carbon disulfide		5 U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane		5 U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene		5 U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5 U	5	4-Methyl-2-pentanone		50	U	50
Chloroform		5 ช	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	o u	100	Toluene		5	U	5
1,1,1-Trichloroethane		5 U	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 U	5	Ethylbenzene		5	U	5
Vinyl acetate	1	0 U	10	Styrene		5	U	5
Dichlorobromomethane		5 U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	102	81 - 117
BROMOFLUOROBENZENE	101	74 - 121
1,2-DICHLOROETHANE-D4	98	70 - 120

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 74 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

EXTRACTION DATE: 11/30/93
ANALYSIS DATE: 12/09/93
DILUTION FACTOR: 0.033

UNITS: MG/KG		Re	eporting			I	Reporti
Re	sult	Qual	Limit		Result	Qual	Limit
Phasel				O. C. Disibushaluana	0.33		0.330
Phenol	0.330	-	0.330	2,6-Dinitrotoluene	0.33		0.825
bis(2-Chloroethyl)ether	0.330		0.330	3-Nitroaniline			
2-Chlorophenol	0.330		0.330	Acenaphthene	0.33		0.330
1,3-Dichlorobenzene	0.330		0.330	2,4-Dinitrophenol	0.82		0.825
1,4-Dichlorobenzene	0.330		0.330	4-Nitrophenol	0.82		0.825
Benzyl alcohol	0.330		0.330	Dibenzofuran	0.33		0.330
1,2-Dichlorobenzene	0.330		0.330	2,4-Dinitrotoluene	0.33	-	0.330
2-Methylphenol	0.330		0.330	Diethylphthalate	0.33		0.330
bis(2-Chloroisopropyl)ether	0.330		0.330	4-Chlorophenyl-phenylether			0.330
4-Methylphenol	0.330		0.330	Fluorene	0.33	-	0.330
N-Nitroso-di-n-propylamine	0.330		0.330	4-Nitroaniline	0.82	-	0.825
Hexachloroethane	0.330		0.330	4,6-Dinitro-2-methylphenol			0.825
Nitrobenzene	0.330		0.330	N-Nitrosodiphenylamine (1)			0.330
Isophorone	0.330		0.330	4-Bromophenyl-phenylether	0.33		0.330
2-Nitrophenol	0.330	ט כ	0.330	Hexachlorobenzene	0.33	-	0.330
2,4-Dimethylphenol	0.330	ט כ	0.330	Pentachlorophenol	0.82	-	0.825
Benzoic Acid	0.330	ט כ	0.330	Phenanthrene	0.33		0.330
bis(2-Chloroethoxy)methane	0.330	ט כ	0.330	Anthracene	0.33	ט כ	0.330
2,4-Dichlorophenol	0.330	ט כ	0.330	Di-n-butylphthalate	0.33		0.330
1,2,4-Trichlorobenzene	0.330	ט כ	0.330	Fluoranthene	0.33		0.330
Naphthalene	0.330	ט כ	0.330	Pyrene	0.33		0.330
4-Chloroaniline	0.330	ט כ	0.330	Butylbenzylphthalate	0.33	U C	0.330
Hexachlorobutadiene	0.330	ט כ	0.330	3,3'-Dichlorobenzidine	0.33	U C	0.330
4-Chloro-3-methylphenol	0.330	ט כ	0.330	Benzo(a)anthracene	0.33	U C	0.330
2-Methylnaphthalene	0.330	ט כ	0.330	Chrysene	0.33	U C	0.330
Hexachlorocyclopentadiene	0.330	ט כ	0.330	bis(2-Ethylhexyl)phthalate	0.33	U C	0.330
2,4,6-Trichlorophenol	0.330	υ 0	0.330	Di-n-octylphthalate	0.33	ט ס	0.330
2,4,5-Trichlorophenol	0.829	5 U	0.825	Benzo(b)fluoranthene	0.33	ט ס	0.330
2-Chloronaphthalene	0.330	ט כ	0.330	Benzo(k)fluoranthene	0.33	ט כ	0.330
2-Nitroaniline	0.825	5 บ	0.825	Benzo(a)pyrene	0.33	ט כ	0.330
Dimethylphthalate	0.330	ט כ	0.330	Indeno(1,2,3-cd)pyrene	0.33	ט כ	0.330
Acenaphthylene	0.330		0.330	Dibenzo(a,h)anthracene	0.33	υ σ	0.330
-				Benzo(g,h,i)perylene	0.33	ט כ	0.330

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

Surrogates	% Recovery	Limits
Nitrobenzene-D5	37	23 - 120
2-Fluorobiphenyl	40	30 - 115
Terphenyl-D14	71	18 - 137
Phenol-D5	42	24 - 113
2-Fluorophenol	34	25 - 121
2,4,6-Tribromophenol	53	19 - 122

409832-003

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003

Work Order: B3-11-282

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL

DILUTION FACTOR (6010): 1.0

UNITS: MG/KG

		Result	Result Qual	Reporting Limit	Method Reference	Analysis Date
Ars	enic	0.010	บ	0.010	7060	12/10/93
Alu	minum	0.20	U	0.20	6010	12/15/93
Bar	ium	0.20	U	0.20	6010	12/15/93
Ber	yllium	0.0050	U	0.0050	6010	12/15/93
Cad	mium	0.0050	U	0.0050	6010	12/15/93
Chr	omium	0.010	U	0.010	6010	12/15/93
Cop	per	0.0250	Ū	0.0250	6010	12/15/93
Iro	n	0.10	U	0.10	6010	12/15/93
Nic	kel	0.040	U	0.040	6010	12/15/93
Lea	d	0.0030	ប	0.0030	7421	12/10/93
Mer	cury	0.00020	Ū	0.00020	7471	12/08/93
Sil	ver	0.010	U	0.010	6010	12/15/93
Zin	c	0.020	U	0.020	6010	12/15/93

Data qualifier key:

- E estimated value
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

NOTE: Dilution Factor applies to Method 6010 only.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: WATER
ANALYSIS DATE: 11/30/93
DILUTION FACTOR: 1.0

UNITS: UG/L

•			Reportin	ng			Re	eporting
	Result	Qual	Limit		Result	Qua	1	Limit
Chloromethane	1	LO	J 10	1,2-Dichloropropane		5	U	5
Bromomethane	_		J 10	trans-1,3-Dichloropropene	<u></u>	5	U	5
Vinyl chloride	_		J 10	Trichloroethene		5	U	5
Chloroethane			J 10	Chlorodibromomethane		5	U	5
Methylene chloride	_		J 10	1,1,2-Trichloroethane		5	U	5
Acetone	-		J 100	Benzene		5	U	5
Carbon disulfide			U 5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5	U 5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane			U 5	Bromoform		5	U	5
trans-1,2-Dichloroethene		5	U 5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5	U 5	4-Methyl-2-pentanone	,	50	U	50
Chloroform		5	U 5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	U 5	1,1,2,2-Tetrachloroethane	;	5	U	5
2-Butanone	10	00	100	Toluene		5	U	5
1,1,1-Trichloroethane		5	U 5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	5	Ethylbenzene		5	U	5
Vinyl acetate	:	10	U 10	Styrene		5	U	5
Dichlorobromomethane		5	U 5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	99	88 - 110
BROMOFLUOROBENZENE	101	86 - 115
1,2-DICHLOROETHANE-D4	101	76 - 114

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 78 of 81

Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

SAMPLE ID: LAB BLANK #2

SAMPLE DATE:

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	<u>Limit</u>	Units	Analyzed	Reference
Mercury		0.000200	0.00020	MG/KG	12/13/93	EPA7471

409832-003

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

Work Order: B3-11-282

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME ICP Metals

TEST CODE 6010

Metals by ICP

Inductively coupled emission spectroscopy according to Method 6010, "Test Methods for Evaluating Solid Waste Physical/Chemical Methods", SW-846, Third Edition.

409832-003

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

List Volatiles

Hazardous Substance Method 8240, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance List Extractables

Method 8270, SW-846, Test Methods for Evaluating Solid Waste, Third Edition. Acid/Base-Neutral extraction followed by GC/MS analysis.

TEST NAME 9071/418.1 for TPH

TEST CODE 9071IR

9071 Prep and IR Analysis Method 9071, SW846, Test Methods for Evaluating Solid Waste, Third Edition. Soxhlet extraction from Method 9071 using freon and infrared analysis of the extract using Method 418.1.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS GF

Arsenic

Graphite Furnace

Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes,

EPA-600/4-82-055, December 1982.

TEST NAME Cation Exchange Capacity TEST CODE CEC A

Cation exchange Capacity

Part 2: Chemical and microbiological properties method 57-3. American Society of Agronomy, Methods of soil Analysis 2nd Edition.

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003 Work Order: B3-11-282

TEST NAME Chromium VI

TEST CODE CR VI

Chromium VI

Method 7196, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Colorimetric analysis.

Equivalent to Standard Methods 3500-Cr D.

TEST NAME Grain Size Distriubtion

TEST CODE GRAIN

Method not available.

TEST NAME Mercury

TEST CODE HG AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid

Wastes, Third Edition. Cold vapor atomic absorption.

Method 7470 is used for water.

Method 245.5-"Technical Additions to Methods for

Chemical Analysis of Water and Wastes,"

EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK2

Method not available.

TEST NAME Moisture Content

TEST CODE MOIS G

Method not available.

TEST NAME Lead - Graphite Furnace

TEST CODE PB_GF

Lead

EPA 7421, SW-846, Test Methods for Evaluating Solid

Graphite Wastes, Third Edition.

Furnace

EPA 239.2-Technical Additions to Methods for Chemical

Analysis of Water and Wastes, " EPA-600/4-82-055,

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Company: IT CORPORATION

Date: 12/23/93

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684

Work Order: B3-11-282

TEST NAME Lead - Graphite Furnace TEST CODE PB_GF

December 1982.

TEST NAME Vertical Permeability TEST CODE V_PERM

Method not available.

TEST NAME GFAA Digestion - Soil TEST CODE 23050F

Soil Digestion Method 3050, SW-846, Test Methods for Evaluating Solid

Wastes, Third Edition. Acid digestion technique for

409832-003

Graphite Furnace/Flame AA analysis.

TEST NAME ICPES Digestion - Soil TEST CODE \$3050P

Soil Digestion Method 3050, SW-846, Test Methods for Evaluating Solid

Wastes, Third Edition. Acid digestion technique for

ICPES analysis. Equivalent to Method 3050A, SW-846

Update I, July 1992.

INTERNATIONAL TECHNOLOGY CORPORATION

CHAIN OF CUSTODY RECORD* **ANALYSIS REQUEST AND**

Reference Document No.314097 6311282

Page 1 of 2

CORPORATION	ION			 - -					١
Project Name/No. 1	No. 1 TAFB 409832	32 Samp	Samples Shipment Date 7 11/22193	ent Date	_ <i> </i> 2	193 Bill to: ⁵	5	·	White:
Sample Team Memb	Sample Team Members 2 1. Herrington, M. Wilson	M.Wilson	Lab Des	stination	8 I TAS	Destination 8 TTAS Austin	100 s		To a
Profit Center No. 3	No. 3 3527	4	Lab	Lab Contact ⁹	4 Karr	Kermen Deun			CCO
Project Manager ⁴	ager 4 Jinny Taylor	Proj	Project Contact/Phone 12	/Phone		405-736-7260 Dem McGreegoon Bennet to: 10	10 Tim Jenning		mpa
Purchase Order No. ⁶			Carrier/Waybi 8460756183	aybi 🗗 4	160756	(24)	T. T. Austin	ustin	ny sa
Required Report Date 11	late 11 16 working Days	Shoo	ONE	CONT	MINER	E CONTAINER PER LINE			amples
Sample ¹⁴ Number	Sample ¹⁵ Description/Type	Date/Time ¹⁶ Container ¹⁷ Sample ¹⁸ Collected Type Volume	Container ¹⁷ Type	Sample ¹⁸ Volume	Pre- ¹⁹ servative	Requested Testing ²⁰ Program	Condition on ²¹ Receipt	Disposal ²² Record No.	S
A1561	2-62 13 . Soil	22.6 \$ 9-22-11	916.55	(2) Soon!	Cool	8270	1.35-11-14-CKJ		Yellow
P1561		0755 1 KW (1804)		125m1	_	Вачо	On a second of the second of t		: Field
A1562		0804		Soom		8270 60101 200			і сору
45428 A1562		ьово	>	125 m 1		BA40			/
J 5428		5180	stainks.	(3)		George Land - Vest K, Moisthur CEC. Trainsing	.ts 146 		
A1563		0825	3.5	600 m.l		8 & 10 6010 / 1000	ဒ နူးသော (နောက် နောက် (*S
A1563		0825		125 ml		8270	* ***	-	ee ba
P3818	→	9689 A	->	500 m l	→	8170 6610[100	_3		ck of f
Special Instructions: 23 Pt	ins: 23 A1561 MS	# cusm	566. Tri	لمسالااح	A15	ALSEL MS/MSD ; HISER Trip Blank ; Alseg Digitude of AlseB	87514		orm fo

*See back of form for special instructions

(mos.

Archive

Disposal by Lab

Date: 1/-23-13

Fime: ٥الاد

Date: Time:

Date: Time:

Sample Disposal: ²⁵ Return to Client **1** D Possible Hazard Identification: 24 Non-hazard _

Unknown Z QC Level: 27 Poison B Skin Irritant Turnaround Time Required: ²⁶ Flammable |

Project Specific (specify): 1. Received by (Signature/Affiliation) Date: 11/21/93 Time: Relinquished by ²⁸ Hush. Signature/Affiliation) Normal 12

2. Received by (Signature/Affiliation) 3. Received by (Signature/Affiliation) Date: Date: Time: Time: 3. Relinquished by (Signature/Affiliation) Relinquished by Signature/Affiliation

Comments: ²⁹



Project Name Tin Ican Sool

CHAIN OF CUSTODY RECORD (cont.)* **ANALYSIS REQUEST AND**

Reference Document No.30 314642

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6311282

Samples Shipment Date 11/22/93

Project No. 409832.03

White: To accompany samples Yellow: Field copy *See back of form for special instructions Disposal 2 Record No. 11-16-53 1200 Th 3274100C 2 1000, 40c 11. 28 5) Condition on Receipt 418,1 418.1 661º/2000 418.1 6010/2000 8 20 8270 60 10 / 7000 418.1 7000 418.1 822 6010/2000 Requested Testing Program 418.1 418.1 8270 60101 ONE CONTAINER PER LINE 2740 82 4C RAYO 8240 8240 8240 8240 820 8240 8240 B270 8420 8270 ठ५ रक्ष Pre-13 servative 뇌 200 9 K35 K1 K125 M1 6001 Container 1 Sample 18
Type Volume SOOM 125m 125 m 125 m YO M! 500 m 125 m 500 m 500 m 125 m 500 ml (25 m Soom 125 m Soom 500 m 125 ml 11/22/93 0838 Date/Time 16 Collected 11/22/93 0838 623 89 h/22 193 160 849 6.58 1628 715 Trip Blank Description/Type A-62B, Soil 1,50 -6 Sample 14 Number 2151A AISEY A 1567 A156B A1566 A1568 A1513 A 1567 A 565 B1565 A1573 A1572 A1520 A1570 A1571 A1569 A1571 A1569

Work order : B311282

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
01B						
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	86.2
	Chromium VI	B311282-17B	1203CR_VI1	12/02/93	12/03/93	50.0
	Mercury	B311282-17B	1208HGAA1	12/08/93	12/08/93	125
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	86.2

Work order : B311282

Sample ID : A1561-MS

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B						
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	104
	Chromium VI	B311282-17B	1203CR VI1	12/02/93	12/03/93	50.0
	Mercury	B311282-17B	1208HGAA1	12/08/93	12/08/93	120
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	417

Work order : B311282

Sample ID : A1561-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03в						
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	103
	Chromium VI	B311282-17B	1203CR VI1	12/02/93	12/03/93	50.0
	Mercury	B311282-17B	1208HGAA1	12/08/93	12/08/93	123
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	103

Work order : B311282

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04B						
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	95.2
	Chromium VI	B311282-17B	1203CR VI1	12/02/93	12/03/93	50.0
	Mercury	B311282-17B	1208HGAA2	12/08/93	12/08/93	112
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	95.2

Work order : B311282

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
06В						
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	105
	Chromium VI	B311282-17B	1203CR VI1	12/02/93	12/03/93	50.0
	Mercury Lead	B311282-17B B311282-17B	1208HGAA1 12053050F1	12/08/93 12/05/93	•	118 105

Work order : B311282

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
07B						
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	108
	Chromium VI	B311282-17B	1203CR VI1	12/02/93	12/03/93	50.0
	Mercury	B311282-17B	1208HGAA1	12/08/93	12/08/93	116
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	108

Work order : B311282

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
08B						
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	108
	Chromium VI	B311282-17B	1203CR VI1	12/02/93	12/03/93	50.0
	Mercury	B311282-17B	1208HGAA1	12/08/93	12/08/93	116
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	108

Work order : B311282

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
10B						
	9071IR	B311282-17B	1206TPHIR1	12/06/93	12/07/93	1.0
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	115
	Chromium VI	B311282-17B	1203CR VI1	12/02/93	12/03/93	50.0
	Mercury	B311282-17B	1208HGAA1	12/08/93	12/08/93	114
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	115

Work order : B311282

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
11B						
	9071IR	B311282-17B	1206TPHIR1	12/06/93	12/07/93	1.0
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	110
	Chromium VI	B311282-17B	1203CR_VI1	12/02/93	12/03/93	50.0
	Mercury	B311282-17B	1208HGAA1	12/08/93	12/08/93	116
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	110

Work order : B311282

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
12B						
	9071IR	B311282-17B	1206TPHIR1	12/06/93	12/07/93	1.0
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	98
	Chromium VI	B311282-17B	1203CR VI1	12/02/93	12/03/93	50.0
	Mercury	B311282-17B	1208HGAA1	12/08/93	12/08/93	122
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	98

Work order : B311282

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
13B						
	9071IR	B311282-17B	1206TPHIR1	12/06/93	12/09/93	1.0
	Arsenic	B311282-17B	12053050F1	12/05/93	3 12/10/93	97.1
	Chromium VI	B311282-17B	1203CR VI1	12/02/93	12/03/93	50.0
	Mercury	B311282-17B	1212HGAA1	12/13/93	3 12/13/93	108
	Lead	B311282-17B	12053050F1	12/05/93	3 12/10/93	97.1

Work order : B311282

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
14B						
	9071IR	B311282-17B	1206TPHIR1	12/06/93	12/07/93	1.0
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	89.3
	Chromium VI	B311282-17B	1203CR_VI1	12/02/93	12/03/93	50.0
	Mercury	B311282-17B	1208HGAA1	12/08/93	12/08/93	129
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	357

Work order : B311282

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
15B						
	9071IR	B311282-17B	1206TPHIR1	12/06/93	12/07/93	1.0
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	111
	Chromium VI	B311282-17B	1203CR_VI1	12/02/93	12/03/93	50.0
	Mercury	B311282-17B	1208HGAA1	12/08/93	12/08/93	115
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	111

Work order : B311282

FRAC	Blank Tests Reference		Batch Prep ID Date		Analysis Date	Dil. Factor
16B						
	9071IR	B311282-17B	1206TPHIR1	12/06/93	12/07/93	1.0
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	106
(Chromium VI	B311282-17B	1203CR_VI1	12/02/93	12/03/93	50.0
1	Mercury	B311282-17B	1208HGAA1	12/08/93	12/08/93	118
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	106

Work order : B311282

Sample ID : LAB BLANK #1

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
17B						
	9071IR	B311282-17B	1206TPHIR1	12/06/93	12/07/93	1.0
	Arsenic	B311282-17B	12053050F1	12/05/93	12/10/93	1.0
	Chromium VI	B311282-17B	1203CR VI1	12/03/93	12/03/93	1.0
	Mercury	B311282-17B	1208HGAA1	12/08/93	12/08/93	1.0
	Lead	B311282-17B	12053050F1	12/05/93	12/10/93	1.0

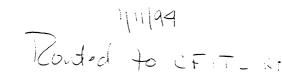
Work order : B311282

Sample ID : LAB BLANK #2

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
19A M	lercury	B311282-19A	1213HGAA1	12/13/93	12/13/93	1.0



ANALYTICAL SERVICES



CERTIFICATE OF ANALYSIS

IT CORPORATION
1250 CAPITAL OF TX HWY
BLDG. 3, SUITE 200
AUSTIN, TX 78746-6443
TIM JENNINGS

Date: 01/11/94

Work Order: B3-12-169

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O. 5001
Date Received: 12/14/93
Number of Samples: 7
Sample Type: WATER

409832-003-01

I. Introduction

Samples were labeled as follows:

SAMPLE IDENTIFICATION	LABORATORY #
A1606	B3-12-169-01
A1607	B3-12-169-02
A1608	B3-12-169-03
A1609	B3-12-169-04
A1609-MS	B3-12-169-05
A1609-MSD	B3-12-169-06
LAB BLANK #1	B3-12-169-07

Reviewed and Approved:

Jon Bartell

Laboratory Director

Page: 2 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Page: 3 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1606

SAMPLE DATE: 12/02/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/27/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		Re	eporting				Re	porting
	Result Qua	1	Limit		Result	Qual	L	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	2	. 9	J	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		LO	U	10
l,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	ţ	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		0	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	99	88 - 110
BROMOFLUOROBENZENE	100	86 - 115
1,2-DICHLOROETHANE-D4	94	76 - 114

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-169

SAMPLE ID: A1607

SAMPLE DATE: 12/13/93 15:00:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref _	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric		380		MG/L as CaCo3		EPA310 1
TPH - IR		0.96U	0.96	MG/L		EPA418 1
Phenolics		0.0100	0.010	MG/L	01/06/94	
Chloride by Ion Chrom.		17	10	MG/L		EPA300 0
Chemical Oxygen Demand		25 U	25	MG/L		EPA410 4
Chromium VI		0.0100	0.010	MG/L	12/14/93	
Nitrate and Nitrite		3.3	0.50	MG/L		EPA353 2
Silica		8.8	2.0	MG/L	12/29/93	_
Sulfate by Ion Chrom.		17N	10	MG/L		EPA300 0
Total Dissolved Solids		190	10	MG/L		EPA160 1
Total Kjeldahl Nitrogen		0.25UN	0.25	MG/L		EPA351 3
Total Organic Carbon		1.00		MG/L		EPA415 1
Total Suspended Solids		1900		MG/L		EPA160 2
Total Phosphorus		0.19N	0.10	•		EPA365_3

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1607 SAMPLE DATE: 12/13/93 SAMPLE MATRIX: WATER ANALYSIS DATE: 12/27/93 DILUTION FACTOR: 1.0

UNITS: UG/L

		R	eporting				Re	porting
	Result	Qual	Limit		Result	Qua]	L	Limit
Chloromethane	1	0 υ	10	1,2-Dichloropropane		5	U	5
Bromomethane	1	0 υ	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	0 U	10	Trichloroethene		5	U	5
Chloroethane	1	0 υ	10	Chlorodibromomethane		5	U	5
Methylene chloride	1	0 U	10	1,1,2-Trichloroethane		5	U	5
Acetone	10	0 U	100	Benzene		5	U	5
Carbon disulfide		5 บ	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 ປ	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane		5 U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene		5 U	5	2-Hexanone	ļ	50	U	50
cis-1,2-Dichloroethene		5 U	5	4-Methyl-2-pentanone		50	U	50
Chloroform		5 บ	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	0 υ	100	Toluene		5	U	5
1,1,1-Trichloroethane		5 U	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 บั	5	Ethylbenzene		5	U	5
Vinyl acetate	1	0 U	10	Styrene		5	U	5
Dichlorobromomethane		5 U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits		
TOLUENE-D8	103	88 - 110		
BROMOFLUOROBENZENE	103	86 - 115		
1,2-DICHLOROETHANE-D4	96	76 - 114		

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 6 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1607 SAMPLE DATE: 12/13/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/16/93 ANALYSIS DATE: 12/30/93 DILUTION FACTOR: 1.0

UNITS: UG/L		R	eporting			F	eporting
R	esult	Qual	Limit		Result	Qual	Limit
Phenol	1	0 υ	10	2,6-Dinitrotoluene	1	υ 0	10
bis(2-Chloroethyl)ether	1	ט 0	10	3-Nitroaniline	2	5 U	25
2-Chlorophenol	1	ט 0	10	Acenaphthene	1	υ (C	10
1,3-Dichlorobenzene	1	υ 0	10	2,4-Dinitrophenol	2	5 U	25
1,4-Dichlorobenzene	1	U 0	10	4-Nitrophenol	2	5 U	25
Benzyl alcohol	1	υ 0	10	Dibenzofuran	1	ט כ	10
1,2-Dichlorobenzene	1	υ 0	10	2,4-Dinitrotoluene	1	U C	10
2-Methylphenol	1	υ 0	10	Diethylphthalate	1	U C	10
bis(2-Chloroisopropyl)ether	1	υ 0	10	4-Chlorophenyl-phenylether	: 10	ט כ	10
4-Methylphenol	10	υ 0	10	Fluorene	10	ט כ	10
N-Nitroso-di-n-propylamine	10	0 U	10	4-Nitroaniline	10	ט כ	10
Hexachloroethane	10	0 U	10	4,6-Dinitro-2-methylphenol	L 2!	5 U	25
Nitrobenzene	10	υ 0	10	N-Nitrosodiphenylamine (1)	10	υ σ	10
Isophorone	10	υ 0	10	4-Bromophenyl-phenylether	10	ט כ	10
2-Nitrophenol	10	υ 0	10	Hexachlorobenzene	10	ט כ	10
2,4-Dimethylphenol	1	υ 0	10	Pentachlorophenol	2	5 U	25
Benzoic Acid	10	υ 0	10	Phenanthrene	10	ט כ	10
bis(2-Chloroethoxy)methane	10	υ 0	10	Anthracene	10	ט כ	10
2,4-Dichlorophenol	10	υ 0	10	Di-n-butylphthalate	10	U	10
1,2,4-Trichlorobenzene	10	υ 0	10	Fluoranthene	10	υ (10
Naphthalene	10	υ σ	10	Pyrene	10	υ (10
4-Chloroaniline	10	บ C	10	Butylbenzylphthalate	10	ט כ	10
Hexachlorobutadiene	10	υ C	10	3,3'-Dichlorobenzidine	10	υ (10
4-Chloro-3-methylphenol	10	υ C	10	Benzo(a)anthracene	10	ט כ	10
2-Methylnaphthalene	10	บ C	10	Chrysene	10	υ (10
Hexachlorocyclopentadiene	10	υ C	10	bis(2-Ethylhexyl)phthalate	· 10	ט כ	10
2,4,6-Trichlorophenol	10	υ 0	10	Di-n-octylphthalate	10	υ	10
2,4,5-Trichlorophenol	10	υ C	10	Benzo(b) fluoranthene	10	υ (10
2-Chloronaphthalene	10	υ σ	10	Benzo(k)fluoranthene	10	U	10
2-Nitroaniline	2	5 ช	25	Benzo(a)pyrene	10	ט כ	10
Dimethylphthalate	10	υ C	10	Indeno(1,2,3-cd)pyrene	10	υ (10
Acenaphthylene	10	υ C	10	Dibenzo(a,h)anthracene	10	ט כ	10
				Benzo(g,h,i)perylene	10	ט כ	10
				· - · · - · - · - · - · - · · - · · · ·			

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1607

SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	90	35 - 114
2-Fluorobiphenyl	92	43 - 116
Terphenyl-D14	89	33 - 141
Phenol-D5	80	10 - 94
2-Fluorophenol	80	21 - 100
2,4,6-Tribromophenol	95	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 8 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

5.0

0.020

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1607

SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER
PREP DATE: 12/16/93
ANALYSIS DATE: 01/05/94
DILUTION FACTOR: 1.00000

UNITS: MG/L Reporting Result Qual Limit Aluminum N 32 0.20 Barium 3.7 0.20 Cadmium 0.0066 0.0050 Calcium 100 5.0 Chromium 0.12 N 0.010 Copper 0.10 0.025 Iron 57 0.10 Magnesium 57 5.0 Manganese 1.2 0.015 N Nickel 0.079 N 0.040 Potassium 7.3 5.0 Selenium 0.10 UN 0.10 Silver 0.010 0.010 U

Data qualifier key:

Zinc

Sodium

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance

25

N

0.10

- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

SAMPLE ID: A1608

SAMPLE DATE: 12/13/93 15:35:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric		350	10	MG/L as CaCo3		EPA310 1
TPH - IR		0.96U	0.96	MG/L		EPA418 1
Phenolics		0.0100	0.010	MG/L	01/06/94	
Chloride by Ion Chrom.		26		MG/L		EPA300 0
Chemical Oxygen Demand		25 U		MG/L		EPA410 4
Chromium VI		0.0100		•	12/14/93	
Nitrate and Nitrite		1.1	0.050	MG/L		EPA353 2
Silica		8.6	2.0	MG/L	12/29/93	
Sulfate by Ion Chrom.		14N	10	MG/L		EPA300 0
Total Dissolved Solids		388		MG/L	•	EPA160 1
Total Kjeldahl Nitrogen		0.25UN	0.25	MG/L		EPA351 3
Total Organic Carbon		1.00		MG/L		EPA415 1
Total Suspended Solids		200	10	MG/L		EPA160 2
Total Phosphorus		0.10UN		MG/L		EPA365_3

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1608

SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/27/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		_	orting				Re	porting
	Result Qual	l L	imit		Result	Qua.	1	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	1	LO	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	9	0	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	9	0	Ū	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	Ū	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	Ū	5

Surrogates	% Recovery	Limits
TOLUENE-D8	100	88 - 110
BROMOFLUOROBENZENE	102	86 - 115
1,2-DICHLOROETHANE-D4	97	76 - 114

- U none detected
- ${\tt J}$ estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1608
SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/16/93 ANALYSIS DATE: 12/30/93 DILUTION FACTOR: 1.0

UNITS: UG/L Reporting Reporting Result Qual Limit Result Qual Limit Phenol 10 IJ 10 2,6-Dinitrotoluene 10 U 10 bis(2-Chloroethyl)ether 10 U 10 3-Nitroaniline 25 U 25 2-Chlorophenol 10 U 10 Acenaphthene 10 U 10 1,3-Dichlorobenzene 10 U 10 2,4-Dinitrophenol 25 U 25 1,4-Dichlorobenzene 10 Ħ 10 4-Nitrophenol 25 U 25 Benzyl alcohol 10 10 11 Dibenzofuran 10 U 10 1,2-Dichlorobenzene 10 TT 10 U 2,4-Dinitrotoluene 10 10 2-Methylphenol 10 Ħ 10 Diethylphthalate 10 U 10 pis(2-Chloroisopropyl)ether 10 U 10 4-Chlorophenyl-phenylether 10 U 10 4-Methylphenol 10 U 10 Fluorene 10 TT 10 N-Nitroso-di-n-propylamine 10 TT 10 4-Nitroaniline 10 U 10 Hexachloroethane 10 U 10 4,6-Dinitro-2-methylphenol 25 Ħ 25 Nitrobenzene 10 U 10 N-Nitrosodiphenylamine (1) 10 U 10 Isophorone 10 U 10 4-Bromophenyl-phenylether 10 TT 10 2-Nitrophenol 10 U 10 Hexachlorobenzene 10 U 10 2,4-Dimethylphenol 10 U 10 Pentachlorophenol 25 П 25 Benzoic Acid 10 U 10 Phenanthrene U 10 10 bis(2-Chloroethoxy)methane 10 U 10 Anthracene 10 TT 10 2,4-Dichlorophenol 10 U 10 Di-n-butylphthalate 10 Ħ 10 1,2,4-Trichlorobenzene 10 U 10 Fluoranthene 10 U 10 Naphthalene 10 U 10 Pvrene 10 U 10 4-Chloroaniline 10 Ħ 10 Butylbenzylphthalate 10 U 10 Hexachlorobutadiene 10 U 10 3,3'-Dichlorobenzidine 10 U 10 4-Chloro-3-methylphenol 10 Ħ 10 Benzo(a)anthracene U 10 10 2-Methylnaphthalene 10 U 10 Chrysene 10 U 10 Hexachlorocyclopentadiene 10 U 10 bis(2-Ethylhexyl)phthalate U 10 10 2,4,6-Trichlorophenol 10 U 10 Di-n-octylphthalate 10 U 10 2,4,5-Trichlorophenol 10 U 10 Benzo(b) fluoranthene 10 U 10 2-Chloronaphthalene 10 Ħ 10 Benzo(k)fluoranthene 10 U 10 2-Nitroaniline 25 U 25 U Benzo(a)pyrene 10 10 Dimethylphthalate 10 U 10 Indeno(1,2,3-cd)pyrene 10 U 10 Acenaphthylene 10 TT 10 U Dibenzo(a,h)anthracene 10 10 Benzo(g,h,i)perylene 10 U 10

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-169

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1608
SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits				
Nitrobenzene-D5	88	35 - 114				
2-Fluorobiphenyl	83	43 - 116				
Terphenyl-D14	87	33 - 141				
Phenol-D5	77	10 - 94				
2-Fluorophenol	74	21 - 100				
2,4,6-Tribromophenol	90	10 - 123				

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 13 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1608

UNITS:

SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER
PREP DATE: 12/16/93
ANALYSIS DATE: 01/05/94
DILUTION FACTOR: 1.00000

MG/L			Reporting
	Result	Qual	Limit
Aluminum	2.9	N	0.20
Barium	0.56		0.20
Cadmium	0.0050	U	0.0050
Calcium	61		5.0
Chromium	0.075	N	0.010
Copper	0.025	U	0.025
Iron	4.8		0.10
Magnesium	35		5.0
Manganese	0.12	N	0.015
Nickel	0.067	N	0.040
Potassium	5.0	Ū	5.0
Selenium	0.10	UN	0.10
Silver	0.010	บ	0.010
Sodium	23		5.0
Zinc	0.021	N	0.020

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-169

SAMPLE ID: A1609

SAMPLE DATE: 12/13/93 16:00:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric		190	10	MG/L as CaCo3	12/15/93	EPA310 1
TPH - IR		0.96U	0.96	MG/L	12/28/93	EPA418 1
Phenolics		0.0100	0.010	MG/L	01/06/94	EPA9066
Chloride by Ion Chrom.		24	10	MG/L	01/05/94	EPA300 0
Chemical Oxygen Demand		25บ	25	MG/L	12/28/93	EPA410 4
Chromium VI		0.0100	0.010	MG/L	12/14/93	EPA7196
Nitrate and Nitrite		0.78	0.050	MG/L	01/05/94	EPA353 2
Silica		11	5.0	MG/L	12/29/93	370 1
Sulfate by Ion Chrom.		24N	10	MG/L	01/05/94	EPA300 0
Total Dissolved Solids		258	10	MG/L	12/15/93	EPA160 1
Total Kjeldahl Nitrogen		0.26N	0.25	MG/L	01/10/94	EPA351 3
Total Organic Carbon		1.00	1.0	MG/L	12/20/93	EPA415 1
Total Suspended Solids		100	10	MG/L	• •	EPA160 2
Total Phosphorus		3.9N	0.10	MG/L	01/10/94	_

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1609

SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/27/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		R	eporting				Report	ing
	Result (Qual	Limit		Result	Qual	Limi	.t
Chloromethane	10	ט כ	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		_	U	5
Vinyl chloride	10	U	10	Trichloroethene		_	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10) U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	į	5 U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	5 U	5	2-Chloroethylvinyl ether		LO	U 1	.0
1,1-Dichloroethane	5	5 U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	5 U	5	2-Hexanone		50	U 5	0
cis-1,2-Dichloroethene	5	5 U	5	4-Methyl-2-pentanone		50	U 5	0
Chloroform	5	5 U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	Ę	5 U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100) U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	5 U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	5 U	5	Ethylbenzene		5	U	5
Vinyl acetate	10) U	10	Styrene		5	U	5
Dichlorobromomethane	5	5 U	5	Xylenes, total		5	บ	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	103	88 - 110				
BROMOFLUOROBENZENE	106	86 - 115				
1,2-DICHLOROETHANE-D4	96	76 - 114				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1609
SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/16/93 ANALYSIS DATE: 12/30/93 DILUTION FACTOR: 1.0

DILUTION FACTOR:	1.0						
UNITS: UG/L			eporting				eporting
	Result	Qual	Limit		Result	Qual	Limit
Phenol	1	.0 σ	10	2,6-Dinitrotoluene	10	U	10
bis(2-Chloroethyl)ether	1	.0 σ	10	3-Nitroaniline	25	σ	25
2-Chlorophenol	1	.0 σ	10	Acenaphthene	10	U	10
1,3-Dichlorobenzene	1	.0 σ	10	2,4-Dinitrophenol	25	ט	25
1,4-Dichlorobenzene	1	.0 σ	10	4-Nitrophenol	25	υ	25
Benzyl alcohol	1	.0 σ	10	Dibenzofuran	10	σ	10
1,2-Dichlorobenzene	1	.0 U	10	2,4-Dinitrotoluene	10	U	10
2-Methylphenol	1	.Ο σ	10	Diethylphthalate	10		10
bis(2-Chloroisopropyl)ethe	r 1	.0 σ	10	4-Chlorophenyl-phenylether	. 10	U	10
4-Methylphenol		.0 σ	10	Fluorene	10	σ	10
N-Nitroso-di-n-propylamine	. 1	υ 0.	10	4-Nitroaniline	10	υ	10
Hexachloroethane	1	υ 0.	10	4,6-Dinitro-2-methylphenol	. 25	υ	25
Nitrobenzene	1	.0 ซ	10	N-Nitrosodiphenylamine (1)		σ	10
Isophorone	1	υ 0.	10	4-Bromophenyl-phenylether	10	υ	10
2-Nitrophenol	1	υ 0.	10	Hexachlorobenzene	10	U	10
2,4-Dimethylphenol	1	υ 0.	10	Pentachlorophenol	25	บ	25
Benzoic Acid	1	.Ο υ	10	Phenanthrene	10	U	10
bis(2-Chloroethoxy)methane	1	.Ο υ	10	Anthracene	10	บ	10
2,4-Dichlorophenol	1	.Ο υ	10	Di-n-butylphthalate	10	U	10
1,2,4-Trichlorobenzene	1	.Ο υ	10	Fluoranthene	10	υ	10
Naphthalene	1	0 υ	10	Pyrene	10	บ	10
4-Chloroaniline	1	0 U	10	Butylbenzylphthalate	10	U	10
Hexachlorobutadiene	1	0 υ	10	3,3'-Dichlorobenzidine	10	U	10
4-Chloro-3-methylphenol	1	0 υ	10	Benzo(a)anthracene	10	บ	10
2-Methylnaphthalene	1	0 υ	10	Chrysene	10	U	10
Hexachlorocyclopentadiene	1	0 U	10	bis(2-Ethylhexyl)phthalate	1.4	JB	10
2,4,6-Trichlorophenol	1	0 υ	10	Di-n-octylphthalate	10	บ	10
2,4,5-Trichlorophenol	1	0 υ	10	Benzo(b)fluoranthene	10	บ	10
2-Chloronaphthalene	1	0 υ	10	Benzo(k)fluoranthene	10	บ	10
2-Nitroaniline	2	5 U	25	Benzo(a)pyrene	10		10
Dimethylphthalate	1	0 υ	10	Indeno(1,2,3-cd)pyrene	10	U	10
Acenaphthylene	1	0 υ	10	Dibenzo(a,h)anthracene	10	U	10
				Benzo(g,h,i)perylene	10	U	10

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1609
SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	80	35 - 114			
2-Fluorobiphenyl	83	43 - 116			
Terphenyl-D14	75	33 - 141			
Phenol-D5	75	10 - 94			
2-Fluorophenol	72	21 - 100			
2,4,6-Tribromophenol	87	10 - 123			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1609

SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER
PREP DATE: 12/16/93
ANALYSIS DATE: 01/05/94
DILUTION FACTOR: 1.0

UNITS:

MG/L			Reporting
	Result	Qual	Limit
Aluminum	2.8	N	0.20
Barium	0.20	U	0.20
Cadmium	0.0050	U	0.0050
Calcium	36		5.0
Chromium	0.053	N	0.010
Copper	0.025	U	0.025
Iron	4.3		0.10
Magnesium	19		5.0
Manganese	0.067	N	0.015
Nickel	0.040	UN	0.040
Potassium	5.0	U	5.0
Selenium	0.010	UN	0.010
Silver	0.010	U	0.010
Sodium	22		5.0
Zinc	0.028	N	0.020

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- ${\tt N}$ spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

SAMPLE ID: A1609-MS

SAMPLE DATE: 12/13/93 16:00:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric	1	190		MG/L AS CACO3		EPA310 1
TPH - IR		95		% REC	12/20/93	
Phenolics		78		% REC	01/06/94	
Chloride by Ion Chrom.		90		% REC	01/05/94	
Chemical Oxygen Demand		106		% REC		EPA410 4
Chromium VI		102		% REC	12/14/93	
Nitrate and Nitrite		110		% REC		EPA353 2
Silica		94		% REC	12/29/93	
Sulfate by Ion Chrom.	2	79		% REC	01/05/94	_
Total Dissolved Solids	3	260	10	MG/L	12/15/93	_
Total Kjeldahl Nitrogen		82		% REC	01/10/94	_
Total Organic Carbon		114		% REC	12/20/93	_
Total Suspended Solids	4	140	10	MG/L	12/15/93	_
Total Phosphorus	5	0		% REC	01/10/94	

Referenced notes for these results:

- 1 Duplicate analysis performed in lieu of a matrix spike.
- Matrix spike recovery outside control limits due to matrix interference of sulfate analysis by IC. LCS / LCSD results and all other method Quality Control within acceptance limits.
- 3 Duplicate analysis performed in lieu of a matrix spike.
- 4 Duplicate analysis performed in lieu of a matrix spike.
- Matrix spike outside control limits due to matrix interference. LCS and method Quality Control were acceptable.

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1609-MS
SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/27/93
DILUTION FACTOR: 1.0

UNITS: % REC

	Result			Result
1,1-Dichloroethene	109	Trichloro	ethene	99
		Benzene		102
		Toluene		100
		Chloroben	zene	101
	Surrogates	% Recovery	Limits	
	TOLUENE-D8	104	88 - 110	
	BROMOFLUOROBENZENE	102	86 - 115	
	1,2-DICHLOROETHANE-D4	96	76 - 114	

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1609-MS SAMPLE DATE: 12/13/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/16/93 ANALYSIS DATE: 12/30/93 DILUTION FACTOR: 1.0 UNITS: % REC

Result

F	Result		
Phenol	82	Acenaphthene	93
2-Chlorophenol	90	4-Nitrophenol	89
1,4-Dichlorobenzene	81	2,4-Dinitrotoluene	81
N-Nitroso-di-n-propylamine	79	Pentachlorophenol	113
1,2,4-Trichlorobenzene	86	Pyrene	92
4-Chloro-3-methylphenol	92	1	

Surrogates	% Recovery	Limits
Nitrobenzene-D5	92	35 - 114
2-Fluorobiphenyl	90	43 - 116
Terphenyl-D14	85	33 - 141
Phenol-D5	79	10 - 94
2-Fluorophenol	77	21 - 100
2,4,6-Tribromophenol	98	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/11/94

UNITS:

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1609-MS
SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER
PREP DATE: 12/16/93
ANALYSIS DATE: 01/05/94
DILUTION FACTOR: 1.00000

% REC	Result
Aluminum	120
Barium	106
Cadmium	81
Calcium	97
Chromium	81
Copper	82
Iron	85
Magnesium	96
Manganese	77
Nickel	81
Potassium	102
Selenium	81
Silver	82
Sodium	96
Zinc	80

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

Referenced notes for these results:

Matrix spike recovery outside control limits due to matrix interference of manganese analysis by ICPES. LCS / LCSD results and all method Quality Control within acceptance limits.

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES AUSTIN, TX

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

SAMPLE ID: A1609-MSD

SAMPLE DATE: 12/13/93 16:00:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref _	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric	1	190	10	MG/L AS CACO3	12/15/93	EPA310 1
TPH - IR		100		% REC	02/20/93	EPA418 1
Phenolics		81		% REC	01/06/94	EPA9066
Chloride by Ion Chrom.		91		% REC	01/05/94	EPA300 0
Chemical Oxygen Demand		110		% REC	12/28/93	EPA410 4
Chromium VI		104		% REC	12/14/93	EPA7196
Nitrate and Nitrite		99		% REC	01/05/94	EPA353 2
Silica		108		% REC	12/29/93	_
Sulfate by Ion Chrom.	2	69		% REC	01/05/94	EPA300 0
Total Dissolved Solids	3	260	10	MG/L	12/15/93	EPA160 1
Total Kjeldahl Nitrogen	4	68		% REC		EPA351 3
Total Organic Carbon		0		% REC		EPA415 1
Total Suspended Solids	5	140		MG/L		EPA160 2
Total Phosphorus	6	0		% REC		EPA365 3

Referenced notes for these results:

- 1 Duplicate analysis performed in lieu of a matrix spike.
- Matrix spike duplicate recovery outside control limits due to matrix interference of sulfate analysis by IC. LCS / LCSD results and all other method Quality Control within acceptance limits.
- 3 Duplicate analysis performed in lieu of a matrix spike.
- 4 Matrix spike duplicate outside control limits due to matrix interference. LCS and method Quality Control were acceptable.
- 5 Duplicate analysis performed in lieu of a matrix spike.
- 6 Matrix spike duplicate outside control limits due to matrix interference. LCS and method Quality Control were acceptable.

Page: 24 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1609-MSD
SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/27/93
DILUTION FACTOR: 1.0

UNITS: % REC

	Result			Result
1,1-Dichloroethene	103	Trichloro	ethene	99
		Benzene		103
		Toluene		101
		Chloroben	zene	102
	Surrogates	% Recovery	Limits	
	TOLUENE-D8	102	88 - 110	
	BROMOFLUOROBENZENE	102	86 - 115	

Data Qualifier Key:

- U none detected
- ${\tt J}$ estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result

94

76 - 114

* - Surrogate recovery is outside QC limit

1,2-DICHLOROETHANE-D4

- D compound identified at a secondary dilution factor
- E concentration exceeds calibration range

Page: 25 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1609-MSD SAMPLE DATE: 12/13/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/16/93
ANALYSIS DATE: 12/30/93
DILUTION FACTOR: 1.0

UNITS: % REC

F	Result		
Phenol	86	Acenaphthene	87
2-Chlorophenol	94	4-Nitrophenol	84
1,4-Dichlorobenzene	83	2,4-Dinitrotoluene	77
N-Nitroso-di-n-propylamine	80	Pentachlorophenol	101
1,2,4-Trichlorobenzene	87	Pyrene	95
4-Chloro-3-methylphenol	85	-	

Surrogates	% Recovery	Limits
Nitrobenzene-D5	85	35 - 114
2-Fluorobiphenyl	86	43 - 116
Terphenyl-D14	83	33 - 141
Phenol-D5	79	10 - 94
2-Fluorophenol	80	21 - 100
2,4,6-Tribromophenol	89	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 26 of 35

Company: IT CORPORATION

Date: 01/11/94

UNITS:

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1609-MSD
SAMPLE DATE: 12/13/93
SAMPLE MATRIX: WATER
PREP DATE: 12/16/93
ANALYSIS DATE: 01/05/94
DILUTION FACTOR: 1.00000

% REC	Result
Aluminum	133
Barium	105
Cadmium	81
Calcium	97
Chromium	79
Copper	80
Iron	100
Magnesium	96
Manganese	77
Nickel	79
Potassium	102
Selenium	78
Silver	80
Sodium	92
Zinc	79

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

Referenced notes for these results:

Matrix spike duplicate recovery outside control limits due to matrix interference of manganese, aluminum, chromium, nickle, selenium, and zinc analysis by ICPES. LCS / LCSD results and all method Quality Control within acceptance limits.

Page: 27 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-169

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	<u>Units</u>	Analyzed	Reference
Alkalinity, Titrimetric		5 0 U	50	MG/L as CaCO3		EPA310 1
TPH - IR		1.00	1.0	MG/L		EPA418 1
Phenolics		0.0100	0.010	MG/L	01/06/94	****
Chloride by Ion Chrom.		1.OU	1.0	MG/L	01/05/94	EPA300 0
Chemical Oxygen Demand		2 5 U	25	MG/L		EPA410 4
Chromium VI		0.0100	0.010	MG/L	12/14/93	
Nitrate and Nitrite		0.0500	0.050	MG/L		EPA353 2
Silica		0.20U	0.20	MG/L	12/29/93	
Sulfate by Ion Chrom.		1.00		MG/L		EPA300 0
Total Dissolved Solids		100	10	MG/L		EPA160 1
Total Kjeldahl Nitrogen		0.25U	0.25	MG/L		EPA351 3
Total Organic Carbon		1.00		MG/L		EPA415 1
Total Suspended Solids		100	10	MG/L		EPA160 2
Total Phosphorus		0.100	0.10	•		EPA365_3

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/27/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		F	eporting				Reporting
	Result	Qual	Limit		Result	Qual	Limit
Chloromethane]	.0 t	10	1,2-Dichloropropane		5	U 5
Bromomethane]	.0 t		trans-1,3-Dichloropropene		5	U 5
Vinyl chloride	1	.0 t	10	Trichloroethene		5	υ 5
Chloroethane	1	.0 t	10	Chlorodibromomethane		5	U 5
Methylene chloride	1	.Ο τ	10	1,1,2-Trichloroethane		5	บ 5
Acetone	10	00 t	100	Benzene		-	U 5
Carbon disulfide		5 t	5	cis-1,3-Dichloropropene		5	υ 5
1,1-Dichloroethene		5 t	5	2-Chloroethylvinyl ether		10	บ 10
1,1-Dichloroethane		5 t	5	Bromoform	•	5	บ 5
trans-1,2-Dichloroethene		5 t	5	2-Hexanone		50	บ 50
cis-1,2-Dichloroethene		5 t	5	4-Methyl-2-pentanone		50	บ 50
Chloroform		5 t	5	Tetrachloroethene		5	ช 5
1,2-Dichloroethane		5 t	5	1,1,2,2-Tetrachloroethane		5	บ 5
2-Butanone	10	ο τ	100	Toluene		5	υ 5
1,1,1-Trichloroethane		5 t	5	Chlorobenzene		5	υ 5
Carbon tetrachloride		5 U	5	Ethylbenzene		5	υ 5
Vinyl acetate	1	.o u	10	Styrene		5	U 5
Dichlorobromomethane		5 U	5	Xylenes, total		5	บ 5

Surrogates	% Recovery	Limits			
TOLUENE-D8	100	88 - 110			
BROMOFLUOROBENZENE	102	86 - 115			
1,2-DICHLOROETHANE-D4	96	76 - 114			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 29 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

2-Chloronaphthalene

2-Nitroaniline

Acenaphthylene

Dimethylphthalate

SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/16/93
ANALYSIS DATE: 12/30/93
DILUTION ENCROP: 1.0

DILUTION FACTOR: 1.0 UNITS: UG/L Reporting Reporting Result Qual Limit Result Oual Limit Phenol 10 Ħ 10 2,6-Dinitrotoluene 10 Ħ 10 bis(2-Chloroethyl)ether 10 U 10 3-Nitroaniline 25 U 25 2-Chlorophenol 10 Ħ 10 Acenaphthene 10 TT 10 1,3-Dichlorobenzene 10 IJ 10 2,4-Dinitrophenol 25 TT 25 1,4-Dichlorobenzene 10 U 10 4-Nitrophenol 25 25 Benzyl alcohol 10 TT 10 Dibenzofuran 10 U 10 1,2-Dichlorobenzene 10 IJ 10 2,4-Dinitrotoluene 10 U 10 2-Methylphenol 10 U 10 Diethylphthalate 10 Ħ 10 >is(2-Chloroisopropyl)ether 10 U 10 4-Chlorophenyl-phenylether 10 10 4-Methylphenol 10 IJ 10 Fluorene 10 TT 10 N-Nitroso-di-n-propylamine 10 U 10 4-Nitroaniline 10 10 Hexachloroethane 10 U 10 4,6-Dinitro-2-methylphenol 25 25 Nitrobenzene 10 U 10 N-Nitrosodiphenylamine (1) 10 10 Isophorone 10 U 10 4-Bromophenyl-phenylether 10 U 10 2-Nitrophenol 10 IJ 10 Hexachlorobenzene 10 U 10 2,4-Dimethylphenol 10 U 10 Pentachlorophenol 25 25 Benzoic Acid 10 U 10 10 Phenanthrene 10 bis(2-Chloroethoxy)methane 10 U 10 Anthracene 10 10 2,4-Dichlorophenol 10 U 10 1.2 10 Di-n-butylphthalate J 1,2,4-Trichlorobenzene 10 U 10 Fluoranthene 10 10 Naphthalene 10 TT 10 TT Pyrene 10 10 4-Chloroaniline 10 U 10 Butylbenzylphthalate 10 10 Hexachlorobutadiene 10 TT 10 3,3'-Dichlorobenzidine 10 IJ 10 4-Chloro-3-methylphenol 10 10 Benzo(a)anthracene 10 10 2-Methylnaphthalene 10 Ħ 10 Chrysene 10 10 Hexachlorocyclopentadiene 10 1.4 IJ 10 bis(2-Ethylhexyl)phthalate J 10 2,4,6-Trichlorophenol 10 U 10 Di-n-octylphthalate 10 10 2,4,5-Trichlorophenol 10 U 10 10 10 Benzo(b) fluoranthene

10

25

10

10

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10

10

Benzo(k)fluoranthene

Indeno(1,2,3-cd)pyrene

Dibenzo(a,h)anthracene

Benzo(g,h,i)perylene

Benzo(a)pyrene

10

10

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10

10

10

Page: 30 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-12-169 409832-003-01

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	85	35 - 114
2-Fluorobiphenyl	82	43 - 116
Terphenyl-D14	86	33 - 141
Phenol-D5	83	10 - 94
2-Fluorophenol	72	21 - 100
2,4,6-Tribromophenol	84	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 31 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

UNITS:

SAMPLE MATRIX: WATER
PREP DATE: 12/16/93
ANALYSIS DATE: 01/05/94
DILUTION FACTOR: 1.0

	1.0			
MG/L		Result	Qual	Reporting Limit
Aluminum		0.20	υ	0.20
Barium		0.20	Ü	0.20
Cadmium		0.0050	Ū	0.0050
Calcium		5.0	U	5.0
Chromium		0.010	U	0.010
Copper		0.025	U	0.025
Iron		0.10	U	0.10
Magnesium		5.0	U	5.0
Manganese		0.015	U	0.015
Nickel		0.040	U	0.040
Potassium		5.0	U	5.0
Selenium		0.010	U	0.010
Silver		0.010	U	0.010
Sodium		5.0	U	5.0
Zinc		0.020	U	0.020

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

Page: 32 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME Alkalinity, Titrimetric TEST CODE 310_1

Alkalinity EPA 310.1 - Chemical Analysis of Water and Wastewater.

Titrimetric with sulfuric acid.

TEST NAME TPH - IR TEST CODE 418_1

418_1 Method 418.1: Total Recoverable Petroleum Hydorcarbons,

infrared spectrophotmetric method. Methods for the

chemical analysis of water and wastes. USEPA.

TEST NAME ICP Metals TEST CODE 6010

Metals by ICP Inductively coupled emission spectroscopy according to

Method 6010, "Test Methods for Evaluating Solid Waste

Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

Hazardous Substance Method 8240, SW-846, Test Methods for Evaluating Solid

List Volatiles Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance Method 8270, SW-846, Test Methods for Evaluating Solid

List Extractables Waste, Third Edition. Acid/Base-Neutral extraction

followed by GC/MS analysis.

TEST NAME Phenolics TEST CODE 9066

Phenolics SW-846 Method 9066. Total Recoverable Phenolics.

Colorimetric, Automated 4-AAP with Distillation.

Equivalent to EPA Method 420.2.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS GF

Page: 33 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME Arsenic - Graphite Furnace TEST CODE AS_GF

Arsenic

Graphite Furnace Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes,

EPA-600/4-82-055, December 1982.

TEST NAME Chloride by Ion Chrom.

TEST CODE CL IC

Chloride

USEPA 300.0 - The determination of inorganic anions in water by ion chromatography.

TEST NAME Chemical Oxygen Demand

TEST CODE COD

COD

EPA 410.4 - Chemical Analysis of Water and Wastewater. Colorimetric analysis for Chemical Oxygen Demand.

TEST NAME Chromium VI

TEST CODE CR VI

Chromium VI

Method 7196, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Colorimetric analysis. Equivalent to Standard Methods 3500-Cr D.

TEST NAME Mercury

TEST CODE HG AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption. Method 7470 is used for water.

Method 245.5-"Technical Additions to Methods for Chemical Analysis of Water and Wastes," EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK4

Method not available.

Page: 34 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME Nitrate and Nitrite

TEST CODE NO3NO2

Nitrate + Nitrite

Method 353.2-Chemical Analysis of Water and Wastewater. Colorimetric Automated Cadmium Reduction method using Lachat autoanalyzer for NO3 and NO2 as N.

TEST NAME Lead - Graphite Furnace TEST CODE PB GF

Lead

EPA 7421, SW-846, Test Methods for Evaluating Solid

Graphite

Wastes, Third Edition.

Furnace

EPA 239.2-Technical Additions to Methods for Chemical

Analysis of Water and Wastes, " EPA-600/4-82-055,

December 1982.

TEST NAME Silica

TEST CODE SIO2

Silica

Method 370.1-Chemical Analysis of Water and Wastewater. Colorimetric Analysis. This is equal to ASTM D859B.

TEST NAME Sulfate by Ion Chrom.

TEST CODE SO4 IC

Sulfate

USEPA Method 300.0 - The Determination of Inorganic Anions in Water by Ion Chromatography.

TEST NAME Total Dissolved Solids

TEST CODE TDS

Total Dissolved Solids

Method 160.1-Chemical Analysis of Water and Wastewater.

Gravimetric analysis.

TEST NAME Total Kjeldahl Nitrogen

TEST CODE TEN N

Kjeldahl Nitrogen

Method 351.3-Chemical Analysis of Water and Wastewater.

Digestion and colorimetric analysis.

TEST NAME Total Organic Carbon

TEST CODE TOC

Page: 35 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-169

TEST NAME Total Organic Carbon

TEST CODE TOC

Total Organic

Carbon

Method 415.1-Chemical Analysis of Water and Wastewater.

Chemical oxidation and nondispersive

infrared analysis. Equivalent to SW-846 Method 9060. Sample prep is instrument manufacturer specific.

TEST NAME Total Suspended Solids

TEST CODE TSS

Total Suspended

Solids

Method 160.2-Chemical Analysis of Water and Wastewater. Filtration and gravimetric analysis of non-filterable residue.

TEST NAME Total Phosphorus

TEST CODE T_P

Total Phosphorus

Method 365.3-Chemical Analysis of Water and Wastewater.

Digestion and colorimetric analysis.

TEST NAME ICPES Digestion - Water TEST CODE 23005

Water Digestion

Method 3005A, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Digestion procedure for the preparation of surface and ground water samples for analysis by flame atomic absorption spectroscopy and inductively coupled plasma spectroscopy. The procedure determines total recoverable or dissolved metals.

TEST NAME GFAA Digestion - Water

TEST CODE 23020

Water Digestion

Method 3020, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for Graphite Furnace.



ANALYSIS REG. - ST AND CHAIN OF CUSTODY RECORD*

Reference Document Nc. 417458 Page 1 of A.

8312169

Bill to:5 409833.03.01

D.0.5001

Lab Destination 8 TTAS Avain

Report to: ¹⁰ Tim Jennings IT Austin Carrier/Waybill No. 138460755811 Fed Ex

White: To accompany samples

Lab Contact 9 Kermen Desne Project Contact/Phone 12 Dan Mc 61890 Project Name/No. 1409833 / Tinker 5001 Samples Shipment Date 7 13 / 13 / 93 Sample Team Members 2 M い しょ / たた Purchase Order No. 6 409833.03.01 Project Manager 4 Jimny Tay lor Required Report Date 11 Normal 3527 Profit Center No. ³

ONE CONTAINED DED LINE

ple	s	Yello	w: Fiel	d copy	/		* 5	See ba	ack of	form	for	spi	ecial in	structi	ons.
	Disposal ²² Record No.	ઉત્રર કૃષ્ણીએ	336 91062 4 1612	3237061								(mos.)		Date: / 2- (4- າ ງ Time: 0 ຊີ ທ	
	Condition on ²¹ Receipt	6003, 42 12 14-53				A			->			Disposal by Lab		Date: 12-19.	Date: Time:
CONTAINER PER LINE	Requested Testing ²⁰ Program	agi ohe s	30/1 OHES	SATO SVOC	418,1 TPH	9066 Phenols	410.4 COD	351,3 TKN 353,2 Nitrate/Nitrik	GW Parameters as per Worth Plan		Sample Disposal: 25	Return to Client 📘 Dispo	gvel: ²⁷ II. L III. L Project Specific (specify):	1. Received by 28 (Signature/Affiliation) All	ved by
AIINEK	pre- 19 servative	Hcl	HCI	ice	H2504				ice		7		□	1. Receiv (Signature/A	2. Received by (Signature/Affiliation)
	Sample 18 Volume	401	(ક) (સ્વુ	2,51	11	500ml	350ml	250ml	71			Unknown L	GC Level: 27 I. <u>L</u>	59/51/21	
O N II	Container Type	Clear	clear	Amher Glags	_			>	Plastic			Poison B	생길	_	.; ej
	Date/Time ¹⁶ Container ¹⁷ Sample ¹⁸ Collected Type Volume	13/08/93 1700	13/13/93						->					vekin Date:	Date: Time:
	Sample ¹⁵ Description/Type	TRIP BLANK 1700	wate / Fire Training						>	1S: ²³	Jentification: 24	Flammable _ Skin Irritant _	Required: ²⁶ J	M 28 IT ES Austin	
-	Sample ¹⁴ Number	A 1606	A 1607						-	Special Instructions: ²³	ب	Non-hazard Fla	Turnaround-Time Required: ²⁶	1. Relinquished by ²⁸ (Signature/Alfiliation)	2. Relinquished by (Signature/Affiliation)

Comments: 29

3. Relinquished by (Signature/Affiliation)

MS/MSD or Sample # 41609

MCA 3/15/9:

Date: Time:

Date: Time:

3. Received by (Signature/Affiliation)

Date: Time:

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Project No. 409832

Project Name # Tinker 5001

IN . .. RNATIONAL
TECHNOLOGY
CORPORATION

Reference Document No.30 417468 Page 2 of 2

Samples Shipment Date 12/13/93

	White	: To a	ccon	прапу	samp	les	Ye	llow: l	Field o	сору	.,		*See	back	of for	m for	spec	ial ins	tructi	ons.	
	Disposal 22 Record No.			5324020 A 212	3237061								B324120A	3237062							
	Condition on 21 Receipt	17-4-13 R Cos)	-				-														•
PER LINE	Requested Testing 20 Program	6010/7000 metals	7196 Cr64	Somo Moc	8270 SVOC	418,1 TPH	9066 Phenols	410,4 COD 415,1 TOC	351,3 TEN 3553,9 N.+rate/Nrtrip	0/1000	OW Perameters OS Der Work Dlan	96 Cr	Sayo Voc	8270 SVOC	418,1TPH	9066 Phomots	410 14 cob	F 2	10/7	6W parameters as Der wort plan	7196 Cr 67
TAINER	Sample 18 pre-19 Volume servative		ml ice	אן אכו	.t ice	H2504	m	lmi		m HNO3	, ice	125ml Ice	40m/ HC1	L ICE		(H)		->	HN03) (ce	J)
ONE CON	Container ¹⁷ Sample 1 Type Volume	Plastic 500ml			Amber 2156	7 1	500ml	250m1	→ →	Plastic 500mi		Se1 \		4 less 25		(3.) 500m	(4) K	1	Plostic 500ml	07	1 () () () () ()
	Date/Time ¹⁶ Collected			15/13/93									12/13/93								
	Sample 15 Description/Type	well Fire Training		well FireTraining water Area								→	Well Fire Training	-							
	Sample 14 Number	A1607	~	A 1608	-							→	A 1609 (ms/msp worth								

MCA 3 15:91

Sample ID : A1607

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B	3520MS				12/27/93	
	418_1	B312169-07A	1218TPHIR1	12/18/93		1.0
02C	310_1	B312169-07A	1215310_11 1	2/15/93	12/15/93	1.0
	9066	B312169-07A	122890661	12/28/93		1.0
	CL_IC	B312169-07A	0105CL IC1	01/05/94		
	COD	B312169-07A	1228COD2B	12/28/93	•	1.0
	CR_VI	B312169-07A	1214CR VI3	12/14/93		
	NO3NO2	B312169-07A	0105NO3NO2	01/05/94	•	
	SIO2	B312169-07A	1229SIO22	12/29/93		10.0
	SO4_IC	B312169-07A	105SO4 IC1	01/05/94	• •	10.0
	TDS	B312169-07A	1215TDS1	12/15/93		1.0
	TKN_N	B312169-07A	0107TKN N2	01/07/94		1.0
	TOC	B312169-07A	1220TOC3C	12/20/93		1.0
	TSS	B312169-07A	1215TSS1	12/15/93	12/15/93	2.0
	T_P	B312169-07A	0107T_P2	01/07/94	01/10/94	1.0
02D						
- 22	AS GF	B312169-07A	121830201	12/10/02	12 (20 (22	1.0
	HG AA	B312169-07A	121830201 1228HGAA1	12/18/93	• •	1.0
	PB_GF	B312169-07A	121830201	12/28/93	•	1.0
		2312107 07R	121030201	12/18/93	12/29/93	1.0

Sample ID : A1608

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03B						
	418_1	B312169-07A	1218TPHIR1	12/18/93	12/28/93	1.0
03C	310_1	B312169-07A	1215310_11 1	2/15/93	12/15/93	1.0
	9066	B312169-07A	122890661	12/28/93		1.0
	CL_IC	B312169-07A	0105CL_IC1	01/05/94		10.0
	COD	B312169-07A	1228COD2B	12/28/93	12/28/93	1.0
	CR_VI	B312169-07A	1214CR_VI3	12/14/93	12/14/93	1.0
	NO3NO2	B312169-07A	0105NO3NO2	01/05/94	01/05/94	1.0
	SIO2	B312169-07A	122981022	12/29/93	12/29/93	10.0
	SO4_IC	B312169-07A	105SO4_IC1	01/05/94	01/05/94	10.0
	TDS	B312169-07A	1215TDS1	12/15/93	12/15/93	1.0
	TKN_N	B312169-07A	0107TKN_N2	01/07/94	01/10/94	1.0
	TOC	B312169-07A	1220TOC3C	12/20/93	12/20/93	1.0
	TSS	B312169-07A	1215TSS1	12/15/93	12/15/93	1.0
	T_P	B312169-07A	0107T_P2	01/07/94	01/10/94	1.0
03D						
	AS GF	B312169-07A	121830201	12/18/93	12/29/93	1.0
	HG AA	B312169-07A	1228HGAA1	12/28/93		1.0
	PB_GF	B312169-07A	121830201	12/18/93	•	1.0

Sample ID : A1609

		Blank	Batch	Prep	Analysis	Dil.
FRAC	Tests	Reference	ID	Date	Date	Factor
04B						
	418_1	B312169-07A	1218TPHIR1	12/18/93	12/28/93	1.0
04C	310_1	B312169-07A	1215310 11 1	2/15/93	12/15/93	1.0
	9066	B312169-07A	122890661	12/28/93		
	CL IC	B312169-07A	0105CL IC1	• •	• •	
	COD	B312169-07A	1228COD2B	12/28/93	• •	
	CR_VI	B312169-07A	1214CR VI3	12/14/93	•	
	NO3NO2	B312169-07A	0105NO3NO2	01/05/94	• •	
	SIO2	B312169-07A	1229SI022	12/29/93	•	
	SO4_IC	B312169-07A	105SO4 IC1	01/05/94		
	TDS	B312169-07A	1215TDS1	12/15/93	12/15/93	1.0
	TKN_N	B312169-07A	0107TKN N2	01/07/94	01/10/94	1.0
	TOC	B312169-07A	1220TOC3C	12/20/93	12/20/93	1.0
	TSS	B312169-07A	1215TSS1	12/15/93	12/15/93	1.0
	T_P	B312169-07A	0107T_P2	01/07/94	01/10/94	1.0
04D						
	AS GF	B312169-07A	121830201	12/18/93	12/29/93	1.0
	HG AA	B312169-07A	121830201 1228HGAA1	12/18/93		1.0
	PB GF	B312169-07A	121830201	12/28/93	• •	1.0
	_		1110001	-2, 20, 30		1.0

Sample ID : A1609-MS

FRAC	Tests	Blank Reference	Batch ID	Prep A	Analysis Date	Dil. Factor
05B						
	418_1	B312169-07A	1218TPHIR1	12/18/93	12/20/93	1.0
05C	310_1	B312169-07A	1215310 11 1	2/15/93 1	.2/15/93	1.0
	9066	B312169-07A	122890661	12/28/93	01/06/94	1.0
	CL IC	B312169-07A	0105CL IC1		01/05/94	
	COD	B312169-07A	1228COD2B	12/28/93	12/28/93	
	CR_VI	B312169-07A	1214CR VI3	12/14/93	12/14/93	
	NO3NO2	B312169-07A	0105NO3NO2	01/05/94	01/05/94	
	SIO2	B312169-07A	1229SI022	12/29/93	12/29/93	
	SO4_IC	B312169-07A	105SO4 IC1	01/05/94	01/05/94	
	TDS	B312169-07A	1215TDS1	12/15/93	12/15/93	1.0
	TKN_N	B312169-07A	0107TKN N2	01/07/94	01/10/94	1.0
	TOC	B312169-07A	1220TOC3C	12/20/93	12/20/93	1.0
	TSS	B312169-07A	1215TSS1	12/15/93	12/15/93	1.0
	T_P	B312169-07A	0107T_P2	01/07/94	01/10/94	1.0
05D						
บรม	NC CE	B310160 085	10100001			
	AS_GF	B312169-07A	121830201	12/18/93	12/29/93	1.0
	HG_AA	B312169-07A	1228HGAA1	12/28/93	12/28/93	1.0
	PB_GF	B312169-07A	121830201	12/18/93	12/29/93	1.0

Work order : B312169

Sample ID : A1609-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep A	Analysis Date	Dil. Factor
06B						
	418_1	B312169-07A	1218TPHIR1	12/18/93	02/20/93	1.0
06C	310_1	B312169-07A	1215310 11 1	.2/15/93 1	.2/15/93	1.0
	9066	B312169-07A	122890661	12/28/93	01/06/94	1.0
	CL_IC	B312169-07A	0105CL IC1		•	10.0
	COD	B312169-07A	1228COD2B	12/28/93		1.0
	CR_VI	B312169-07A	1214CR VI3	12/14/93	12/14/93	1.0
	NO3NO2	B312169-07A	0105NO3NO2	01/05/94		
	SIO2	B312169-07A	1229SIO22	12/29/93	12/29/93	5.0
	SO4_IC	B312169-07A	105SO4 IC1	01/05/94	01/05/94	10.0
	TDS	B312169-07A	1215TDS1	12/15/93	12/15/93	1.0
	TKN_N	B312169-07A	0107TKN N2	01/07/94	01/10/94	1.0
	TOC	B312169-07A	1220TOC3C	12/20/93	12/20/93	1.0
	TSS	B312169-07A	1215TSS1	12/15/93	12/15/93	1.0
	T_P	B312169-07A	0107T_P2	01/07/94	01/10/94	1.0
06D						
- 00	AS GF	B312169-07A	121830201	12/18/93	12/20/02	1.0
	HG AA	B312169-07A	121830201 1228HGAA1	12/18/93	12/29/93 12/28/93	1.0
	PB_GF	B312169-07A	121830201	12/28/93	12/29/93	1.0

Work order : B312169

Sample ID : LAB BLANK #1

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
07A	310_1	B312169-07A	1215310_11	12/15/93	3 12/15/93	1.0
	418_1	B312169-07A	1218TPHIR1	12/18/93		1.0
	9066	B312169-07A	122890661	12/28/93	01/06/94	1.0
	AS_GF	B312169-07A	121830201	12/18/93	12/29/93	1.0
	CL_IC	B312169-07A	0105CL_IC1	01/05/94	01/05/94	10.0
	COD	B312169-07A	1228COD2B	12/28/93		1.0
	CR_VI	B312169-07A	1214CR VI3	12/14/93	12/14/93	1.0
	HG_AA	B312169-07A	1228HGAA1	12/28/93	• •	1.0
	NO3NO2	B312169-07A	0105N03N02	01/05/94	•	1.0
	PB_GF	B312169-07A	121830201	12/18/93	12/29/93	1.0
	SIO2	B312169-07A	1229SIO22	12/29/93		1.0
	SO4_IC	B312169-07A	105SO4 IC1	01/05/94	• •	10.0
	TDS	B312169-07A	1215TDS1	12/15/93	•	1.0
	TKN_N	B312169-07A	0107TKN N2	01/07/94		1.0
	TOC	B312169-07A	1220TOC3C	12/20/93		1.0
	TSS	B312169-07A	1215TSS1	12/15/93	• •	1.0
	T_P	B312169-07A	0107T_P2	01/07/94	·	1.0

		Sign of the State		
WORK ORD	ER # 8312	169		
	7			
# OF WAT	ER SAMPLES	<u>1974 - 17</u> 7 - 13		
# OF SOI	L SAMPLES			
		. ************************************		
8240		S102		
8270		TDS	$-\sqrt{\nu}$	/
IR		TKN H.	$-\sqrt{}$	/
AS	/ /	TOC		
CRIV	$\overline{\checkmark\checkmark}$	TSS		/
HG	V \	GT P.	11	
ICP				300
PB -				
SO4_IC				
310_1				
9066	$\sqrt{}$			
CL_IC	1			
COD	1 James			
WOOMOO				9.4

APPENDIX A

DE	F	Ι	N	Ι	T	Ι	0	N	S

ND(U)	-	Analyte was analyzed for, but not detected. The value given after the ND or "U" is the detection limit for that compound.
A	-	The compound denoted with an "A" indicates a suspected aldol condensation product.
В	-	Indicates the compound was also detected in the blank, but at levels less than 5X the detection limit. Values for this compound may be suspect.
J	-	Indicates the compound was detected in the sample, but at levels less than the detection limit, but above the MDL. Results should be requarded as estimated.
2	-	Indicates that the compound was identified in an analysis at a secondary dilution factor.
Я	-	Indicates presumptive evidence of a compound. This flag is used for tentatively identified compounds.

MS	-	Matrix Spike	UG/L	-	Micrograms/Liter
MSD	_	Matrix Spike Duplicate	UG/KG	-	Micrograms/Kilogram
		Relative Percent Difference	MG/KG	-	Milligrams/Kilogram
			MG/L	-	Milligrams/Liter
DL	_	Detection limit	%REC	_	Percent Recovery

OC Acceptance Limits

Method 8240	Water	3oil_	Method 8270	Water	Soil
Surrogate & Recovery BFB Dichloroethane Toluene-d8		-4-121 -0-120 31-117	Surrogate & Recoveries Nitrobenzene-d5 2-Fluorobiphenyl Terphenyl-d14 Phenol-d5 2-Fluorophenol 2,4,6-Tribromophenol	35 - 114 43 - 116 33 - 141 10 - 94 21 - 100 10 - 123	30 - 11! 18 - 13 24 - 11:
Matrix Spike Limits 1,1-Dichloroethene Trichloroethene Benzne Toluene Chloropenzene	61-145 71-120 76-127 76-125 75-130	62 - 137 66 - 142	Matrix Spike Limits(%) Phenoi Chlorophenoi 1,4-Dichloropenzene N-Nitroso-di-propylamine 1,2,4-Trichloropenzene 4-Chloro-3-methylphenoi Acenaphthene 4-Nitrophenoi 2,4-Dinitrotoluene Pentachlorophenoi Pyrene	14 - 99 19 - 107 18 - 101 32 - 108 24 - 109 31 - 111 33 - 110 1 - 141 35 - 106 1 - 147 42 - 119	21 - 11 34 - 10 30 - 11 d - 13

METALS CONTROL LIMITS

ICP: ± 20% for MS/MSD & Duplicate

GF: Control Charts for MS/MSD; ± 20% for Dup

ICV/CCV

GF ICV ± 20% GF CCV ± 20% ICP ICV/CCV ± 10% HG AA ± 20%

CONTROL LIMITS GRAPHITE FURNACE/MERCURY

ANALYTE	MATRIX	LIMITS	COMMENTS
Нд	water	21 - 170	Control Charts (B inst.)
Н g	soil	44 - 150	Control Charts (B)
As	water	59 - 150	D
As	soil	75 - 125	D
As	water	52 - 140	С
As	soil	35 - 142	С
?b	water	48 - 153	Ð
9b	soil	75 - 125)
Pb	water	33 - 163	С
Pb	soil	75 - 125	С
Se	water	37 - 136	D
S e	soil	27 - 118	D
Se	water	20 - 147	С
Se	soil	2.6 - 139	С

QC BATCH ID FOR	R GFAA	/CVAA	- Test C	Code: _	1470
PREPREP METHOD:	_				
PREP METHOD:	_				
ANALYSIS METHOD:	7470				
BATCH DATE:	12/28	/93			
INSTRUMENT ID:	Á				
SET (BATCH) #:	1				

Lab	Sample	ID's

1 B312098 -01A 2 B312071 - 02B 3 -03B

4 - 04B

5 B312202-01H 6 -02H

7 B312203-014

8 ↓ -02H

9 B312169 - 02D

10 -03D 11 -04D

12 B312221 - 01A

13 -02A

14 -03A

15 -04A

16 -05A

17 -06A

18 -07A

19

20 KMB 12/28/93

-08A

Batch QC ID's

LCS ID: 1cv 12-28-93-1

LCSD ID: CCV 12-28-93-1

MBID: ICB 12-28-93-1

MSID: B312169-05D MS } Spk g -04D

MSDID: B312169-060 MSD } Spk g -04D

REP ID: B312169 -040 DUP

Batch QC Results

MDL: 0.00020 PQL: 0.00020

Sample ID	Result	Units	Analyst	Date/Time
Method Blk	40.00020	MalL	KMB	12/28/93 1300
LCS % Rec	lo i	% Rec		
LCSD % Rec	106	% Rec		
LCS/LCSD RPD		% RPD		
MS % Rec	116	% Rec		
MSD % Rec	118	% Rec		
MS/MSD RPD	1.7/	% RPD		
REP RPD	0.00	% RPD	1	1

Comments:	
	K50B 93
	728

QC BATCH ID FO	R GFAA/CVAA - Test Code: As-GF
PREPREP METHOD:	
PREP METHOD:	Z3020
ANALYSIS METHOD:	7000
BATCH DATE:	12/18/93
INSTRUMENT ID:	D
SET (BATCH) #:	

Lab	Sample ID's
	1 KmB 12/28/93
1	B312017-01C
2	B312169-020
3	-03D
4	-04D
5	
6	
7	
8	
9	
10	
11	\ \end{above}
12	10/20/93
13	
14	
15	
16	
17	7
18	7
19	
20	

Batch	QC	ID's	

LCS ID:	LCS 2012 1893-1
LCSD ID:	LCSD20121893-1
MB ID:	PB20121893-1
MS ID:	B312169-050 MS
MSD ID:	B312169-060 mSD
REP ID:	Kma 12/18/93

Batch QC Results

	Ana	lyst	Date/T	ime
	34	,	12-29.9	3 10:57
:	1			
;				
)				
;				
;				
)		J		U

MDL: 0.65 PQL: 0.010

Sample ID	Result	Units	Analyst	Date/Time
Method Blk	(0.010		36	12-29-93 10:57
LCS % Rec	++++ 101	% Rec		
LCSD % Rec	105	% Rec		
LCS/LCSD RPD	3.28	% RPD		
MS % Rec	94	% Rec		
MSD % Rec	107	% Rec		
MS/MSD RPD	12.9	% RPD		U
REP RPD	_	% RPD		

Comments:	No Duplicate	preped	_
			_
			<u> </u>

QC BATCH ID FOR	R GFAA/CVAA - Test Code: Pb-66
PREPREP METHOD:	
PREP METHOD:	Z3020
ANALYSIS METHOD:	7421
BATCH DATE:	12/18/93
INSTRUMENT ID:	C
SET (BATCH) #:	

Lab	Sample ID's
1	B312017-01C
2	B312169-020
3	-03D
4	· -04D
5	
6	
7	
8	
9	
10	
11	\R. R. A.
12	/0/20/93
13	
14	
15	
16	
17	
18	7
19	
20	

Batch QC	ID's	
LCS ID:	LCS 2012 1893-1	
LCSD ID:	LCSD20124893-1	
MB ID:	PB20121893-1	
MS ID:	B312169-050 MS	
MSD ID:	B312169-060 MSD	, ,
REP ID:	KNB	12/18/93

Batch QC Results MDL: 2.96 PQL: 0.0030

Sample ID	Result	Units	Analyst	Date/Time
Method Blk	60.0030		36	12-19-93 12:03
LCS % Rec	111	% Rec		
LCSD % Rec	120	% Rec		
LCS/LCSD RPD	7.8	% RPD		
MS % Rec	106	% Rec		
MSD % Rec	124	% Rec		
MS/MSD RPD	15.7	% RPD		
REP RPD	-	% RPD	JU	<u> </u>

Comments:	NO DUP SIMPLE PREPAGO

te/Time:			y LOT7:/_
	12/27/93	Intrument:	
erator:	5013	_ Test/Hatri	x: 8240 /WATE
Column:	CAP	Operator:_	
•			Performed
ype	Lab Sample ID	lab file 10	(Y or N)
Sample	B 3469/04 105		
us n	106		
CS			
Client *	11	to the following ab Sample	Lab File
Sample I		U ===================================	=======================================
1	18	312169/01	•
		02	
		09	
		312 175/01	
	8.	312210/02	
		/0 /	

QC Batch ID

Prep Code/Date:____/_

Test Code/Date:____/_

Set #:_____ Inst. ID:____

SOILS VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY AND BLANK SPIKE RECOVERY

Lab Name: ITAS - Austin Date Ran: 12/27/93

QC BATCH ID

 Sample Names:
 >C1695
 >C1696
 >CBS27
 Prep Code/Date:

 CLIENT ID:
 1422
 1448
 1209
 Test Code/Date:
 8240
 Test Code/Date: 8240 | 12/27/93

Matrix Spike - SAM Sample No. B312169/05 Matrix: SDILS Set #: 0 Inst.ID: 01 (5.000 6M TO 5 ML) 1.0 X DIL

COMPOUND NAME	: SPIKE : ADDED :(ug/Kg)		: CONC : (ug/Kg)	: MS : % : REC #	PC :		: CONC :(ug/Kg)	BS
:::::::::::::::::::::::::::::::::	; 50.00 ; 50.00 ; 50.00	: .00 : .00	54.29 49.36	; 109 ; 99 ; 102	1 59 - 172 1 1 62 - 137 1 1 66 - 142 1	; (53.34)	107 59 - 172 9 98 62 - 137 1 102 66 - 142
Toluene Chlorobenzene	50.00	.00	1 49.97 1 50.34	100 101 	59 - 139 60 - 133)

: Compound		SPIKE ADDED	;	MSD CONC.	;	MSD	;	Z	;	90		LIM	ITS	;	;
I NAME		(ug/Kg)		(ug/Kg)				RPD			;			EC.	;
	== :	======	= ; :	======	: ; =	======	== ;	====	== {:						
11,1-Dichloroethene	;	50.00	,	51.43	,	103	;	5	;	22	;	59	-	172	į
:Trichloroethene	;	50.00	;	49.63	;	99	;	1	;	24	1	62	-	137	;
Benzene			1	51.66	1	103	1	1	;	21	į	66	-	142	;
!Toluene		50.00	;	50.33	!	101	;	1	;	21	:	59	-	135	i
Chlorobenzene	_;	50.00	;	50.79	1	102	;	1	1	21	;	60	-	133	;
1			į		;		_;		_;		1				_;

- # Column to be used to flag recovery and RPD values with an asterisk.
- # Values outside of QC limits.

RPD: 0 out o Spike Recovery:	f 5 0 out o	limits. outside	limit	5.			1116 > CBK2?	
SURROGATE RECOVERIES		>C169	5 >	C1696	>CBS27	LIMITS	LAB BLANK	ALL
:Toluene - d8		 : 1:	04 :	102	102	: 81 - 117	97	,
:Bromofluorobenzene		; 10	02		1 104	1 74 - 121	100	
11,2-Dichloroethane - d	14	:	96 :	94	; 98	: 70 - 120	¦ 94	
:		;	;		.;	!	;	

	QC BATCH ID FOR ICPES
PREPREP METHOD:	NA
PREP METHOD:	23005
ANALYSIS METHOD:	60PO
BATCH DATE:	12-16-93
INSTRUMENT ID:	B
SET (BATCH) #:	3

Lab Sample ID's	,
1) 8312169-020	
2) -030	
3) $\sqrt{-040}$	
4)	
5)	,
6)	•
7)	•
8)	
9)	
10)	
11)	
12)	
13)	
14)	
15)	
16)	
17)	
18)	
19)	
20)	

LCS ID: LC505 121693-1	
LCSD ID: LCS005/2/693-/	
MB ID: PBN05121693-1	
MS ID: B312/69-050 MS	•
MSD ID: B312169-060 ms0	ı
REP ID:	

Batch QC Samples

ANALYTES REQUIRED FOR BATCH:

Ag Al As B Ba Be Ca Cd Co Cr Cu Fe K Mg Mn Mo Na

QC Batch ID	
prep Method:	
Prep Method:	3005
Analysis Method:	6010
Batch Date:	12/16/93
Instrument ID:	В
Batch (Set) #:	3

Matrix: WATER	Data Repo	rted to PQL
Units: MG/L	_}	
		Corr. Fact.
Method Blk ID:	PB05121693-1	1
LCS ID:	LCS05121693-1	1
LCSD ID:	LCSD05121693-1	1
MS Sample ID:	B312169-05D	1
MSD Sample ID:	B312169-06D	1
Rep Sample ID:		0

Page 1 of 2

	Replicate :	Sample Dat	a		В	Blank / LC	S Batch QC							
	Original			П		Method		LCS	T	П	LCSD		Τ	% RPD for
	Result for	Replicate		П		Blank	LCS true	Conc.	LCS		Conc.	LCSD		LCS/LCSD
Analyte	Replicate	Result	% RPD	a		Result	Value (mg/L	Found	% Rec.	a	Found	% Rec.	Q	Recoveries Q
Ag				П	<	0.010	1	0.9617	96		0.97	97		0.95
Al				П	<	0.20	10	10.2	102		10.22	102	Γ	0.20
As				П	<	0.10	1	1.046	105		1.06	106		1.61
В					<	0.20	1	0.9738	97		0.99	99		1.77
Ba				П	<	0.20	1	0.9872	99		0.99	99		0.14
Be				П	<	0.0050	1	0.9767	98		0.99	99		0.89
Ca				П	<	5.0	20	20.79	104		21.00	105		1.01
Cd					<	0.0050	1	0.9664	97		0.98	98		1.13
Co					<	0.050	1	0.9388	94		0.95	95		1.25
Cr					<	0.010	1	0.9905	99		1.00	100		0.52
Cu					<	0.025	1	0.9395	94		0.94	94		0.37
řе					<	0.10	10	10.62	106		10.51	105		1.04
K					<	5.0	20	19.47	97		20.03	100		2.84
Mg				\Box	<	5.0	20	20.23	101		20.32	102		0.44
Mn					<	0.015	1	0.9468	95		0.95	95		0.60
Мо					<	0.10	1	0.9549	95		0.97	97		1.20
Na					<	5.0	20	20.14	101		20.15	101		0.05
Ni					<	0.040	1	0.946	95		0.95	95		0.87
Рь					<	0.050	1	0.9492	95		0.96	96		0.90
Sb					<	0.060	1	1.015	101		1.00	100		1.39
Se					<	0.10	1	1.001	100		1.03	103		2.86
Si					<	1.0	10	11.26	113		11.12	111		1.25
Sn					<	0.10	1	0.9343	93		1.00	100		7.09
Ti					<	0.10	1	0.9903	99		0.99	99		0.33
Π					<	0.20	1	1.055	106		1.03	103		2.20
V					<	0.050	1	0.9608	96		0.97	97		0.76
Zn					<	0.020	1	0.9605	96		0.96	96		0.12

QC Data Reviewed By:	Date/Time: 1/5/94/6;30	
Comments:		

alifiers:

N - LCS % Recovery was outside method limits of 80-120 %.

R - % RPD for LCS/LCSD was outside control limit of 20 %.

^{*} Replicate RPD was outside method control limit of 20 %

QC Batch ID							
reprep Method:							
Prep Method:	3005						
Analysis Method:	6010						
Batch Date:	12/16/93						
Instrument ID:	В						
Batch (Set) #:	3						

Batch QC Information		
Matrix: WATER	Data Re	ported to PQL
Units: MG/L		
	_	Corr. Factor
Method Blk ID:	PB05121693-1	11_
LCS ID:	LCS05121693-1	1
LCSD ID:	LCSD05121693-1	1
MS Sample ID:	B312169-05D	1
MSD Sample ID:	B312169-06D	1
Rep Sample ID:		

Page 2 of 2

	Spike Sam	ple Data											
	Original		I I		П					% RPD for	П	% RPD for	Π
	Result for	MS	MS Spike	MS		MSD	MSD Spike	MSD		MS/MSD		MS/MSD Result	
Analyte	MS/MSD	Result	Added	% Rec.	Q	Result	Added	% Rec.	Q	Recoveries	Q	As Replicates	Q
Ag	ND	0.8174	1.00	82		0.8028	1.00	80	L	1.80	Ш		$oldsymbol{\perp}$
Al	2.76	14.72	10.00	120		16.06	10.00	133	N	10.61	Ц		\perp
As					Ш				L		Ш		╀
В					Ц				L				╀
Ва	ND	1.058	1.00	106	Ц	1.054	1.00	105	L	0.38	Ш		\perp
Ве	ND	0.8283	1.00	83	Ц	0.8153	1.00	82	L	1.58	\sqcup		┦
Ca	35.69	55.03	20.00	97	Ц	55.13	20.00	97	L	0.52			┦
Cd	ND	0.8135	1.00	81	Ц	0.8103	1.00	81	L	0.39	Ц		\perp
Со					Ц				L				┯
Cr	0.053	0.8592	1.00	81	Ш	0.8479	1.00	79	N		Ц		↓.
Cu	ND	0.815	1.00	82	Ц	0.799	1.00	80	L	1.98	L		╄
Fe	4.338	12.81	10.00	85	Ц	14.37	10.00	100	L	16.86			\bot
K	ND	20.48	20.00	102	Ц	20.35	20.00	102	L	0.64			$oldsymbol{\perp}$
Mg	19.43	38.7	20.00	96	Ц	38.56	20.00	96	L	0.73	Ц		┯
Mn	0.067	0.8398	1.00	77	N	0.837	1.00	77	N	0.36			┯
Мо					Ц				L		Ц		↓_
Na	21.96	41.1	20.00	96	Ц	40.34	20.00	92	L	4.05	Ц		╀-
Ni	ND	0.8079	1.00	81	Ц	0.789	1.00	79	N	2.37	L		\bot
Pb					Ц				L		L		┯
Sb					Ц				L		Ц		\bot
Se	ND	0.8065	1.00	81	Ц	0.7792	1.00	78	N	3.44	L		╀-
Si	1				Ц				L		Ц		╄
Sn					Ц				L				╄
Ti					Ц				\vdash		Н		+
TI					Ц				L		L		╀
V					Н				L				┼-
Zn	0.0276	0.8247	1.00	80		0.8159	1.00	79	N	1.11			

nments:	
	_

Qualifiers (Q):

- H Sample concentration was greater than five times the spike level.
- N Spike recovery was outside method control limits of 80-120 %.
- R Percent RPD for MS/MSD recoveries was outside method control limit of 20 %.
- D Sample concentration was greater than five times the spike level.

 The RPD was calculated between the MS and MSD results as replicates.

Test	 de/Date	کد،	27	Ö	114-16-13
Set		Ins	t.	Di	

Туре	Lab Sample ID Lab File ID	Performed (Y or N)
Blank Sample	13312169-BLK B312169LCS	
HSD	13312169-5B 4MSD -6B 4MSD	

This QA Spike Lot applies to the following Samples:

Client Sample ID	Lab Sample ID	Lab File ID
	18312169-ZB	112-16 501
	-3B	_
2 1	- 413	_
3	-018	_
		_
5		_
		_
		_]
		_
2		_
		_
		_
		_
7		_
3		
9		

Comments:	

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY AND BLANK SPIKE RECOVERY

Lab Name: ITAS - Austin QC BATCH ID

 Sample Names:
 D1695
 D1696
 Prep Code/Date:
 3520
 12/16/93

 Date Ran:
 12/30/93
 12/30/93
 Test Code/Date:
 8270
 12/16/93

Time Ran: 23.09 23.37 Set 0: * Inst.ID: D
Matrix Spike - SAN Sample No. B31216904 Matrix: WATER

(1000 ML TO 1 ML) 1.0 X DIL

	SPIKE	SAMPLE	MS	MS	QC
COMPOUND	ADDED	CONC	CONC	1	LIMITS
NAME	(ug/L)	(ug/L)	(ug/L)	REC .	REC.
*************************	: ======	-		=====	
PHENOL	_ 100.00	.11	82.34	82	26 - 9€
2-CHLOROPHENOL	100.00	.41	90.24	9 0	25 - 102
L,4-DICHLOROBENZENE	50.00	.11	44.27	81	28 - 104
-MITROSODI-N-PROPYLANINE	50.00		39.36	79	41 - 126
1,2,4-TRICHLOROBENZENE	51.00		42.99	86	38 - 107
A-CHLORO-3-METHYLPHENOL	100.00	.00	91.58	92	26 - 103
ACENAPHTHENE	51.41	.11	46.63	93	31 - 137
-NITROPHENOL	100.00		89.24	89	11 - 114
2,4-DINITROTOLUENE	51.11	.11	48.68	81	28 - 89
PENTACHLOROPHENOL	100.00	.11	113.43	113 *	17 - 109
PYRENE	51.44		46.01	1 92	35 - 142

	SPIKE	MSD	MSD			
COMPOUND	ADDED	COMC.	1	;	Q C	LIMITS
NAME	(ug/L)	(ug/L)	REC #	RPD #	RPD	REC.
	: = = = = = = =	=======	=======	=======	=======	
PHENOL	100.00	86.01	86	4	35	26 - 90
2-CHLOROPHENOL	100.00	94.26	94	4	5.€	25 - 102
1.4-DICHLOROBENZENE	50.00	41.55	83	3	27	28 - 104
N-NITROSODI-N-PROPYLANINE_	51.11	39.82	8	1	38	41 - 120
1.2.4-TRICHLOROBENZENE	50.00	43.47	87	1	23	38 - 107
4-CHLORO-3-NETHYLPHENOL	100.00	85.48	85	7	33	26 - 163
ACENAPHTHENE	50.00	43.50	87	7	19	31 - 137
4-NITROPHENOL	100.00	84.19	84	6	5 0	11 - 11
2.4-DINITROTOLUENE	50.00	38.71	77	5	47	28 - 89
PENTACHLOROPHENOL	100.00	101.35	101	11	47	17 - 109
PYRENE	50.00	47.53	i 95 i	3	36	35 - 142

Column to be used to flag recovery and RPD values with an asterisk.

RPD: • out of 11 outside limits.

Spike Recovery: 1 out of 22 outside limits.

D1695	01696	LIMITS	
92	85	35 -	114
91	86	43 -	116
85	83	33 -	141
79	79	10 -	94
17	8 ●	21 -	100
98	89	18 -	123
	92 98 85 79	92 85 90 86 85 83 79 79 77 80	92 85 35 - 90 86 43 - 85 83 33 - 79 79 10 - 77 80 21 -

FORM III SV-1

^{*} Values outside of QC limits.



SENIVOLATILE BLANK SPIKE RECOVERY WATER

Lab Mame: ITAS - Austin

CLIENT ID:

QC BATCH ID

Test Code/Date:

D8569 D8169

Prep Code/Date: 3520

8271

12/16/93

Date Ran: Time Ran:

Sample Mames:

12/30/93 12/30/93 9.33

9.85

TO 1.00 ML)

Set 1:1

Inst.ID: 0

12/16/93

Matrix Spike - SAM Sample No.

(1888.88 ML

B312169/BS Natrix: WATER

1.0 X DIL

	SPIKE	BLANK	BS	85	QC LIMITS
COMPOUND	ADDED	CONC	CONC	•	
NAME	(ug/L)	(ug/L)	(ug/l)	REC #	REC.
PHENOL	160.66	. 66	76.18	76	14 - 99
2-CHLOROPHENOL	100.00	.41	92.01	92	19 - 107
1,4-DICHLOROBENZENE	51.11	.41	38.57	77	18 - 141
N-NITROSODI-N-PROPYLANIN	54.44	. 01	39.73	79	32 - 148
1,2,4-TRICHLOROBENZENE_	58.88	. 44	46.12	92	24 - 109
4-CHLORO-3-WETHYLPHENOL_	100.00	.00	96.64	97	31 - 111
ACENAPHTHENE	54.44	. 00	49.34	99	33 - 110
4-NITROPHENOL	100.00	.00	75.98	76	1 - 141
2,4-DINITROTOLUENE	50.00	.00	40.70	81	35 - 146
PENTACHLOROPHENOL	100.00	.11	102.49	102	1 - 147
PYRENE	51.11	.44	52.15	104	42 - 119

CL	•
SPIKE	
12 - 11	42
27 - 12	3 40
36 - 9	7 28
41 - 11	6 38
39 - 9	8 28
23 - 9	7 42
46 - 11	8 31
10 - 8	1 51
24 - 9	6 38
9 - 10	3 50
26 - 12	7 51

Spike Recovery:

out of 11

outside limits.

SURROGATE RECOVERIES	DBS69	OBL69	LIMITS
D5-NITROBENZENE	88	85	35 - 114
2-FLUOROBIPHENYL	91	83	43 - 116
D14-P-TERPHENYL	88	86	33 - 141
D5-PHENOL	75	83	10 - 94
2-FLUOROPHENOL	73	72	21 - 100
2,4,6-TRIBRONOPHEMOL	86	84	10 - 123
		1	1

12/38/47

[#] Column to be used to flag recovery and RPD values with an asterisk.

^{*} Values outside of QC limits.

ITAS - AUSTIN EXTRACTABLES QA LOT SUNHARY.

QC Batch ID

Prep Code/Dat	10. T-W-+3	12/14/8
Test Code/Dat	A1/_	
Gat &	Inst. ID:	

r			Percent
Туре	Lab Sample ID	Result	Recovery
	1 B312,54-B11	ND	
Blank_ Blank spike	135	5.7	100
HS	016	11	
HSD	080	12	100

QC fimits
< Reporting fimit
70 to 130%
70 to 130%
70 to 130%

This QA Spike Lot applies to the following Samples:

Client	Sam # + Fraction	Date of Prep
T, Ncen	B312154-C6B B312154-C6B 63B 03B 03B 00B 00B 00B	12/16/93
		Tincer B312154-068 B312154-068 B312154-068 038 048 058 058

Comments:	

PREPRE	PREPREP METHOD:					
PREP METHOD:						
<u></u>	S METHOD: C	R_V+				
	ATCH DATE:	2/14/53	12:00			
	RUMENT ID:	A	7.5.0			
<u> </u>	(BATCH) #: -	>				
	()					
Work Orders/Fractions	Associated Wi	th Batch				
Lab Sample ID's	Batch QC ID's					
		· · · · · · · · · · · ·	-			
: B312169-00C	LCS ID: LCS					
2 <u>63</u> C	LCSD ID: LCS					
	MBID: MB					
4	MS ID: 33	1.)/69-0	<u>5</u> (_			
5	MSD ID: 12.3/	3169 - a	<mark>9</mark> ر			
6	REP ID: 区3	12169-0				
7	Batch QC Res	uite		MDL:	1	Pal: 0.0/0
9 / 13/1	Datch GC nes	uits		WDL		<u> </u>
9 / 12/15	10	Doggida	Lloito	Analyst	!Date/	Time
10	Sample III	HACILIT		MILATON		1 (111)
10 / 57	Sample ID Method Blk	Result	Units			
11 / 12/14	Methoa Blk	IU	1 Mg/C	Allalyst		1/531-201
12 / 12/14	Method Blk	1 96,0	1 /ms/L 1% Rec			
11 / 12 / H 12 13	Method Blk LCS % Rec LCSD % Rec	196,0	1% Rec			
11 / 12 / 13 12 13 13 14	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP	1 96,0 102 DI 6.04	1 /n.s/ 1% Rec 1% Rec 1% RPD			
11 / 12/14 12 13 13 15	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP MS % Rec	196,0 102 DI 6.04	1 /kg/L 1% Rec 1% Rec % RPD % Rec			
11 / 12/14 12 13 14 15 16	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP	102 103 103 104	% Rec % RPD % Rec % RPD % Rec			
11 / 12 / 13 13 / 15 15 / 16 17 /	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP MS % Rec MSD % Rec	102 103 103 104	1 /kg/L 1% Rec 1% Rec % RPD % Rec			
11 / 2 12	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP MS % Rec MSD % Rec MS/MSD RPD	1 96,5 102 DI 6.N 103 104 1.94	1% Rec 1% Rec 1% RPD % Rec 1% Rec 1% RPD			
11 / 12 / 13 13 / 15 15 / 16 17 /	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP MS % Rec MSD % Rec MS/MSD RPD	1 96,5 102 DI 6.N 103 104 1.94	1% Rec 1% Rec 1% RPD % Rec 1% Rec 1% RPD			45312:00
11 / 2 12 13 15 16 17 18 19	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP MS % Rec MSD % Rec MS/MSD RPD	1 96,5 102 DI 6.N 103 104 1.94	1% Rec 1% Rec 1% RPD % Rec 1% Rec 1% RPD			45312:00
11 / 2 12 13 15 16 17 18 19	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP MS % Rec MSD % Rec MS/MSD RPD	1 96,5 102 DI 6.N 103 104 1.94	1% Rec 1% Rec 1% RPD % Rec 1% Rec 1% RPD			45312:00
11 / 2 12 13 15 16 17 18 19 20 20 20 10	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP MS % Rec MSD % Rec MS/MSD RPD	1 96,5 102 DI 6.N 103 104 1.94	1% Rec 1% Rec 1% RPD % Rec 1% Rec 1% RPD			45312:00
11 / 2 12 13 15 16 17 18 19 20 20 20 10	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP MS % Rec MSD % Rec MS/MSD RPD	1 96,5 102 DI 6.N 103 104 1.94	1% Rec 1% Rec 1% RPD % Rec 1% Rec 1% RPD			45312:00
11 / 2 12 13 15 16 17 18 19 20 20 20 10	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP MS % Rec MSD % Rec MS/MSD RPD	1 96,5 102 DI 6.N 103 104 1.94	1% Rec 1% Rec 1% RPD % Rec 1% Rec 1% RPD			45312:00
11 / 2 12 13 15 16 17 18 19 20 20	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP MS % Rec MSD % Rec MS/MSD RPD	1 96,5 102 DI 6.N 103 104 1.94	1% Rec 1% Rec 1% RPD % Rec 1% Rec 1% RPD			45312:00
11 / 2 12 13 15 16 17 18 19 20 20 20 10	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP MS % Rec MSD % Rec MS/MSD RPD	1 96,5 102 DI 6.N 103 104 1.94	1% Rec 1% Rec 1% RPD % Rec 1% Rec 1% RPD			45312:00

QC BATCH ID FOR WET CHEM - Test Code: _CR_

QC BATCH ID FOR	WET CHEM - Test Code: NO3 NO,	TNO3-PR.
PREPREP METHOD:		
PREP METHOD:		
ANALYSIS METHOD:	353.2	
BATCH DATE:	1-3-94	
INSTRUMENT ID:	А	
SET (BATCH) #:		

Lab	Sample ID's
1	B312263-01
2	026
3	B3 12 169-02C
4	036
5	046
6	A312176-02C
7	236
8	o4€
9	B312198-01C
10	020
11	B312247-01B
12	B312202-01M
13	02m
14	B312203-01M
15	02 M
16	B312269-01M
17	02
18	B312270_01m
19	B312327-05H
20	

Batch QC	ID's	
LCS ID:	LCS 010\$94-1	,
LCSD ID:	LCSD 010894-	/
MB ID:	mB 010594-	/

MS ID: B312 169-054

MSD ID: 83/2/69-064 REP ID: 83/2/69-034

Batch QC Results

MDL:	PQL:	0.050
------	------	-------

Sample ID	Result	Units	Analyst	Date/Time
Method Blk	NO	mg/L	USB	1/5/94 10:39
LCS % Rec	100	% Rec		
LCSD % Rec	98	% Rec		·
LCS/LCSD RPD	2.0	% RPD		
MS % Rec	110	% Rec		
MSD % Rec	99	% Rec		
MS/MSD RPD	11	% RPD		
REP RPD	3.6	% RPD		

Comments:	

QC BATCH ID FOR WET CHEM - Test Code: SOU-IC
PREPREP METHOD:
PREP METHOD:
ANALYSIS METHOD: Soy_1C
BATCH DATE: 1/44
INSTRUMENT ID: A
SET (BATCH) #: パ

WORK Orders/1 ruodor						
Lab Sample ID's	Batch QC ID's		-			
1 B312169-QC 2 -03C 3 -04C 4 5	LCS ID: の105 LCSD ID: 0105 MB ID: 6105 MS ID: 631 MSD ID: 631 REP ID: 631	794-2 794-1 2169-05 2169-06	ي		1.0	
8	Batch QC Resul	ts		MDL:	PQL:	SIL
9		Result	Units	Analyst	Date/Time	Ì
10	Sample ID		mole	185	1/5/947:39	
11	Method Blk	0.0	% Rec	1 /185	118 (44 1.3)	
12	LCS % Rec	107	% Rec	+		
13	LCSD % Rec	104				
14	LCS/LCSD RPD		% RPD	 		
15	MS % Rec	78.5				
16	MSD % Rec	68.5	% Rec			
17	MS/MSD RPD	13.6	% RPD	1		
18	REP RPD	12.	% RPD			
19						
20						
Comments:						
						

QC BATCH ID FOR	R WET CHEM - Test Code: COLC
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	CL-1C
BATCH DATE:	115194
INSTRUMENT ID:	A
SET (BATCH) #:	Ιβ

WOIR GIGGIO					
Lab Sample ID's	Batch QC ID's		•		
1 13312169-036 2 -036 3 -046 4	LCS ID: 01059 LCSD ID: 01059 MS ID: 0312 MSD ID: 6312 REP ID: 632	74-2 4-1 2169-05C 169-06C	<u>.</u>		
7			•		1.0 1.0
8	Batch QC Resul	ts		MDL:	PQL: ms/L
9		n4	Units	Analyst	Date/Time
10	Sample ID	Result	male	1482	01/05/947:39
11	Method Blk	0.0	% Rec	1	J. C. LOST C. S. T.
12	LCS % Rec	109	% Rec	++-	
13	LCSD % Rec	104	% RPD	 	
14	LCS/LCSD RPD	4.69 +08 900		1-1-	
15	MS % Rec MSD % Rec MSD % Rec	90.095	% Rec	1-1-	
16	MSD % REC IN	90.5.55	% RPD	1-1-	
17		5.64	% RPD	11	
18	REP RPD	3.67			
19					
20					
Comments:					
				_	

QC BATCH ID FOR	WET CHEM - Test Code: 9066
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	9066
BATCH DATE:	12-28-94
INSTRUMENT ID:	A
SET (BATCH) #:	

ab Sample ID's	Batch QC ID's		•		
1 B3/2/69-D2C 2 03C 3 04C 4 5	LCS ID: LCS LCSD ID: LCS/A MB ID: MB MS ID: B3/2 MSD ID: B3/2 REP ID: B3/2	122893- 122893- 169-050	-/ -/ 		
7 8	Batch QC Resul	ts	-	MDL:	PQL: <u>0.0</u>
9			II Inite	Analyst	Date/Time
10	Sample ID	Result	Units	aron	1-6-94 17:02
11	Method Blk	ND	mg/L	anon	1-6-17 17.02
12	LCS % Rec	86	% Rec		
13	LCSD % Rec	84	% Rec	 	
14	LCS/LCSD RPD		% RPD		
15	MS % Rec	78	% Rec		
16	MSD % Rec	81	% Rec		
17	MS/MSD RPD	3,8	% RPD		
18	REP RPD	\mathcal{O}_{-}	% RPD		
19					
20					
Comments:					

QC BATCH ID FO	OR WET CHEM - Test Code: T-P
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	365.4
BATCH DATE:	1-7-94
INSTRUMENT ID:	A
SET (BATCH) #:	2

Lab Sample ID's	Batch QC ID's	_	-		
1 831219-020 2 -030 3 -040 4 5 6	LCS ID: LCS (ID: LCS ID: LCS ID: LCS ID: PBW) MB ID: PBW MS ID: PBW MSD ID: REP ID: ——	20-231 1320-231 230-	<u> </u>	MDL	par. 245
8	Batch QC Resul	ts		MDL:	PQL:
9	Occupio ID	Result	Units	Analyst	Date/Time
10	Sample ID		~31L	DSB	1/7/4/10:40
11	Method Blk	<0.10	% Rec	1 1	1 1 1 1 1 1 1
12	LCS % Rec	104	% Rec		
13	LCSD % Rec			 	
14	LCS/LCSD RPD	~	% RPD	 	
15	MS % Rec	Ø	% Rec	 	
16	MSD % Rec	8	% Rec	 	
17	MS/MSD RPD	Ø	% RPD	 	
18	REP RPD		% RPD		
19					
20					

Comments: ms/msp come at CF A SEPARATE BOTTLE: REDAN SOMPLES AT
SUD DE PUN W/ SOME RESULTS. NON FILED.

QC BATCH ID FOR WE	T CHEM - Test Code: TEN-N
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	351.2
BATCH DATE:	01-07-94
INSTRUMENT ID:	A
SET (BATCH) #:	2

Lab Sample ID's	Batch QC ID's		•		
1 B312169-02C 2 O3C		V 01079 010799 3 01079	<u>/</u> -/		
3 04C	MS ID: 13.3				
4	MSD ID: 83				
5	REP ID:		=		
7			-		
8	Batch QC Resul	ts		MDL:	P QL: _ <i>D,</i> 25
9					
10	Sample ID	Result	Units	Analyst	Date/Time
11	Method Blk	ND	mg/L	DSB	1/10/84 08:44
12	LCS % Rec	85.0	% Rec		
13	LCSD % Rec	93.2	% Rec		·
14	LCS/LCSD RPD		% RPD		
15	MS % Rec	81.7	% Rec		
16	MSD % Rec	679	% Rec		
17	MS/MSD RPD	18.4	% RPD		
18	REP RPD		% RPD		
19					
20					
	,				•
Comments: NC w	ritten for n	nso %	PCVRY		

PREPREP METHOD: NA PREP METHOD: NA ANALYSIS METHOD: ALK TO BATCH DATE: 12-15-93	QC BATCH ID FOR	R WET CHEM - Test Code: ALK-T
ANALYSIS METHOD: ALK TO BATCH DATE: 12-15-93	PREPREP METHOD:	NA
BATCH DATE: 12-15-93	PREP METHOD:	NA
	ANALYSIS METHOD:	ALK TO
	BATCH DATE:	12-15-93
INSTRUMENT ID: A	INSTRUMENT ID:	A
SET (BATCH) #: /	SET (BATCH) #:	/

Lab Sample ID's	Batch QC ID's		-		
6 B312147-09C,20	LCSD ID: 7/A MB ID: 1/A	93-2	- - -	1154, 831 5	2 147 JM
7 8	Batch QC Resul			MDL:	
9					
10	Sample ID	Result	Units	Analyst	Date/Time
11	Method Blk	0		JAM	12-15-93
12	LCS % Rec	100	% Rec	1	!
13	LCSD % Rec	100	% Rec		
:4	LCS/LCSD RPD		% RPD		
15	MS % Rec		% Rec		
16	MSD % Rec	1 1	% Rec		
17	MS/MSD RPD	V	% RPD		
18	REP RPD	1,24	1% RPD	0	
19					
20					
Comments:					

QC BATCH ID FO	R WET CHEM - Test Code: SiDy
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	SiO2.
BATCH DATE:	12/04/53
INSTRUMENT ID:	#
SET (BATCH) #:	16

Lab Sample ID's	
1 B3/2/169-02	C
**	
	C
4 B312063 -	01
5	<u>W</u>
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7	4
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10	
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14 / 🛇	
15/	<u> </u>
16	\
1/7	
18	
19	
20	

	LCS/20993-1
LCSD ID:	LCS/22993-/
MB ID:	MB/22993-1
MS ID:	3312169-056
MODID	-217116 -NIC

Batch QC ID's

Batch QC Results MDL: PQL: Did MDL:

Sample ID	Result	Units,	Analyst	Date/Time
Method Blk	0	molL	SAT	12/25
LCS % Rec	1010	% Rec		Ì
LCSD % Rec	96.D	% Rec		
LCS/LCSD RPD	6.45	% RPD		
MS % Rec	94,4	% Rec		
MSD % Rec	108	% Rec		
MS/MSD RPD		% RPD		
REP RPD	6,45	% RPD	P	γ

Comments:		
		,

	QC BA	ATCH ID FOR	WET CHEN	A - Test C	OOE. TO		
•	PREPREP METHOD:						
	PREP METHOD:						
Δ		METHOD:	06				
		TCH DATE.	-				
		UMENT ID:	A				
			3 (
			// Datab				
Work Orders/F	ractions	Associated W	ith Batch				
Lab Samble 10	S	Batch QC ID	's	_			
1 B3 12/169-	220	LCS ID	5 122093-	2			
	53C		CSD 1220				
	04C	MB ID: M	B 12209	2 -2			
4		MS ID: BE	3/2/16-05				
5	\sum		312169-00	<u>-</u>	_		
6			SD HATEG	122053-	3		
7						1 /	٠,
8		Batch QC Re	suits		MDL:	PQL: / (ز
9				1.1-:4-	1 4 1 4	IDeas &	_
10		[C10 ID	1 🗀 14				
10		Sample ID	Result	Units		!Date/Time	
:1 // 27		Method Blk	1 0	n8/1	Analyst	17(90 /P:00	_
11 / 12		Method Blk LCS % Rec	108	1% Rec			_
:1 // 27		Method Blk LCS % Rec LCSD % Rec	108	1% Rec 1% Rec			
11 / 12		Method Blk LCS % Rec LCSD % Rec LCS/LCSD RI	108	1% Rec 1% Rec 1% Rec % RPD			
11 / 12		Method Blk LCS % Rec LCSD % Rec LCS/LCSD RI MS % Rec	108	1% Rec 1% Rec % RPD % Rec			
11 / 12		Method Blk LCS % Rec LCSD % Rec LCS/LCSD RI MS % Rec MSD % Rec	108 108 108 20: 0	1% Rec 1% Rec % RPD % Rec 1% Rec			
11 12 13 15 15		Method Blk LCS % Rec LCSD % Rec LCS/LCSD RI MS % Rec MSD % Rec MS/MSD RPD	108 108 108 20: 0	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD			
11 / 12		Method Blk LCS % Rec LCSD % Rec LCS/LCSD RI MS % Rec MSD % Rec	108 108 108 20: 0	1% Rec 1% Rec % RPD % Rec 1% Rec			
11 12 13 15 15 16		Method Blk LCS % Rec LCSD % Rec LCS/LCSD RI MS % Rec MSD % Rec MS/MSD RPD	108 108 108 20: 0	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD			
11 12 13 14 15 16 17 18		Method Blk LCS % Rec LCSD % Rec LCS/LCSD RI MS % Rec MSD % Rec MS/MSD RPD	108 108 108 20: 0	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD			
11 12 13 14 15 16 17 18		Method Blk LCS % Rec LCSD % Rec LCS/LCSD RI MS % Rec MSD % Rec MS/MSD RPD	108 108 108 20: 0	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD			
11 12 13 15 15 16 17 18 19		Method Blk LCS % Rec LCSD % Rec LCS/LCSD RI MS % Rec MSD % Rec MS/MSD RPD	108 108 108 20: 0	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD			
11 12 13 15 15 16 17 18 19		Method Blk LCS % Rec LCSD % Rec LCS/LCSD RI MS % Rec MSD % Rec MS/MSD RPD	108 108 108 20: 0	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD			
11 12 13 15 15 16 17 18 19		Method Blk LCS % Rec LCSD % Rec LCS/LCSD RI MS % Rec MSD % Rec MS/MSD RPD	108 108 108 20: 0	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD			
11 12 13 15 15 16 17 18 19		Method Blk LCS % Rec LCSD % Rec LCS/LCSD RI MS % Rec MSD % Rec MS/MSD RPD	108 108 108 20: 0	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD			

BATCH DATE. 15 53 INSTRUMENT ID: A						
	T (BATCH) #:	<u> </u>				
Work Orders/Fraction	s Associated W	/ith Batch				
Lab Samble 10's	Batch QC ID	's				
1B3/2169-020	I CS ID: 1	1716	<u> </u>			
2 630	LCS ID: LC					
3 84C	MB ID: NA		13-1			
4 (DUP DE 040) 05C	MS ID:					
5 DUPOFOROXOC	MSD ID:					
6	REP ID: BS	212119-	(2)			
7			ObC			
8	Batch QC Res	sults	~ С	MDL:	PQL:	
9						
10	Sample ID	Result	Units	Analyst	!Date/Time	
11	Method Blk	IVA	1 mste	JAM	121511	
12	LCS % Rec	1 95.3	1% Rec			
13	LCSD % Rec	90.6	1% Rec			
:4	LCS/LCSD RF		% RPD			
15	MS % Rec	INA	∃% Rec			
16	MSD % Rec		1% Rec		·	
17	MS/MSD RPD		1% RPD			
18	REP RPD	1,92/D	1% RPD	/		
19		,		,		
20						
0						
Comments:						

QC BATCH ID FO	R WET CHEM - Test Code: COD
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	901
BATCH DATE:	12/28/93
INSTRUMENT ID:	A
SET (BATCH) #:	26

Lab Sample ID's 1 B312169-62C - D3C - 044 3 5 6 8 9 10 11 12 13 14 15 16 17 18 19

Batch QC ID's	

LCS 10: LCS 122893-2 LCSD ID: LCSD 12893-2 MS ID: 83/2/69-05C MSD ID: 183/2169-06C REP ID: L(SD 127893-2

Batch QC Results

Sample ID

Method Blk

LCS % Rec

MS % Rec

REP RPD

MSD % Rec

MS/MSD RPD

LCSD % Rec

LCS/LCSD RPD

<u> </u>	J -					0	m./
		MDL:			. P	QL:	1,3/(
				1=			1
ult	Units	Analy	/st	Dat]
)	ms/L	SAT	-	19	28	3/6:00	
26	% Rec	1				<u> </u>	
16.4	% Rec % RPD % Rec						
9,49	% RPD						
06	% Rec					ļ <u>.</u>	
10	% Rec						
3.76	% RPD					ļ,	1
3.76 9.40	% RPD					<u>Y</u>	J

19	
20	
Comments:	

Result

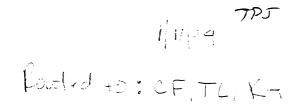
106

106

	BATCH ID FOR				_
	EP METHOD:				
· · · · · · · · · · · · · · · · · · ·	EP METHOD:				
	IS METHOD: 7				
	BATCH DATE. 10				
	TRUMENT ID:	1			4,
SE	T (BATCH) #:				
Work Orders/Fraction	s Associated W	ith Batch			
Cab Samble TU's	Batch QC ID'	s			
· B3/2/69-WC	LCS ID: L	512139	3-1		
2 🕸	LCSD ID: LC	21982	931		
3 DYC	MB ID: W	1	<u> </u>		
4/ 9/10) DST	MS ID:				
IN COUNTS	MSD ID:				
6	REP ID: 13	312169-0	552		
7		•	COL		
8	Batch QC Res	sults		MDL:	PQL: _
9					
10	Sample ID	Result	Units	Analyst	!Date/Time
:1	Method Blk	! DA	1201	MAC	12/5/10:0
12	LCS % Rec	95	!% Rec		•
13	LCSD % Rec	140	!% Rec		
· · ·	LCS/LCSD RF	D: 5.1	% RPD		
15	MS % Rec	NA	% Rec		
16	MSD % Rec		1% Rec		
17	MS/MSD RPD		1% RPD		\/
18	REP RPD	6.4/21	1% RPD	/	
19		7			
20					
Comments:					



ANALYTICAL SERVICES



Date: 01/10/94

CERTIFICATE OF ANALYSIS

IT CORPORATION
1250 CAPITAL OF TX HWY
BLDG. 3, SUITE 200
AUSTIN, TX 78746-6443
TIM JENNINGS

Work Order: B3-12-151

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O. 5001 Date Received: 12/11/93 Number of Samples: 11 Sample Type: WATER 409832-003-01

681-1-89

I. Introduction

Samples were labeled as follows:

LABORATORY #
B3-12-151-01
B3-12-151-02
B3-12-151-03
B3-12-151-04
B3-12-151-05
B3-12-151-06
B3-12-151-07
B3-12-151-08
B3-12-151-09
B3-12-151-10
B3-12-151-11

Reviewed and Approved:

Jon Bartell

baboratory Director

Page: 2 of 51

Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684 Work Order: B3-12-151 409832-003-01

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Page: 3 of 51

Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1599
SAMPLE DATE: 12/02/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/18/93
DILUTION FACTOR: 1.0

UNITS: UG/L

	Reporting				Re			eporting
	Result	Qual	Limit		Result	Qua.	L	Limit
Chloromethane	1	10 t	10	1,2-Dichloropropane		5	U	5
Bromomethane	1	10 U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	10 ti	10	Trichloroethene		5	U	5
Chloroethane]	ιο τ	10	Chlorodibromomethane		5	U	5
Methylene chloride	1	ιο τ	10	1,1,2-Trichloroethane		5	U	5
Acetone	7.	.4 J	100	Benzene		5	U	5
Carbon disulfide		5 Ü	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 t	5	2-Chloroethylvinyl ether		10	U	10
,1-Dichloroethane		5 t	5	Bromoform		5	U	5
crans-1,2-Dichloroethene		5 t	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5 Ü	5	4-Methyl-2-pentanone		50	U	50
Chloroform		5 t	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 t	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	ο τ	100	Toluene		5	U	5
1,1,1-Trichloroethane		5 t	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 t	5	Ethylbenzene		5	U	5
Vinyl acetate		10 t	10	Styrene		5	U	5
Dichlorobromomethane		5 t	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	98	86 - 114
1,2-DICHLOROETHANE-D4	102	76 - 114

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - $\ensuremath{\mathsf{D}}$ compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 4 of 51

Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

SAMPLE ID: A1600

SAMPLE DATE: 12/10/93 13:00:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric		470	10	MG/L as CaCO3	12/17/93	EPA310_1
TPH - IR		1.00	1.0	MG/L	12/27/93	EPA418_1
Phenolics		0.0100	0.010	MG/L	01/06/94	EPA9066
Chloride by Ion Chrom.		39	5.0	MG/L	12/16/93	EPA300_0
Chemical Oxygen Demand		25U	25	MG/L	12/28/93	EPA410_4
Chromium VI		0.0100	0.010	MG/L	12/11/93	EPA7196
Nitrate and Nitrite		3.8	0.50	MG/L	12/14/93	EPA353_2
Silica		8.9	2.0	MG/L	12/29/93	370_1
Sulfate by Ion Chrom.		36	5.0	MG/L	12/16/93	EPA300_0
Total Dissolved Solids		510	10	MG/L	12/14/93	EPA160_1
Total Kjeldahl Nitrogen		0.250	0.25	MG/L	01/07/94	EPA351_3
Total Organic Carbon		2.2	1.0	MG/L	12/20/93	EPA415_1
Total Suspended Solids		750	10	MG/L	12/14/93	EPA160_2
Total Phosphorus		0.100	0.10	MG/L	01/07/94	EPA365_3

Page: 5 of 51

Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01

(512) 892-6684 Work Order: B3-12-151

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1600 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER ANALYSIS DATE: 12/18/93 DILUTION FACTOR: 1.0

UNITS: UG/L

		R	eporting				Re	porting
	Result Qu	al	Limit		Result	Qual	L	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		33		5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
,1-Dichloroethane	5	U	5	Bromoform		5	U	5
_rans-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	45		5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	1.2	J	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	บ	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	<pre>% Recovery</pre>	Limits				
TOLUENE-D8	95	88 - 110				
BROMOFLUOROBENZENE	97	86 - 114				
1,2-DICHLOROETHANE-D4	101	76 - 114				

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 6 of 51

Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-12-151 409832-003-01

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1600 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/15/93 ANALYSIS DATE: 12/22/93 DILUTION FACTOR: 1.0

UNITS: UG/L	.0	R	eporting]	Reporting
•	sult		Limit		Result	Qual	
						-	
Phenol	10	ט כ	10	2,6-Dinitrotoluene	10	ט כ	10
bis(2-Chloroethyl)ether	10	ט כ	10	3-Nitroaniline	2	5 U	25
2-Chlorophenol	10	ט כ	10	Acenaphthene	10	ט כ	10
1,3-Dichlorobenzene	10	ט כ	10	2,4-Dinitrophenol	2	5 U	25
1,4-Dichlorobenzene	10	ט כ	10	4-Nitrophenol	2	5 U	25
Benzyl alcohol	10	ט כ	10	Dibenzofuran	10	ט כ	10
1,2-Dichlorobenzene	10	ט כ	10	2,4-Dinitrotoluene	10	ט כ	10
2-Methylphenol	10	υ σ	10	Diethylphthalate	16	U C	10
is(2-Chloroisopropyl)ether	10	ט כ	10	4-Chlorophenyl-phenylether	. 10	ט כ	10
4-Methylphenol	10	ט כ	10	Fluorene	10	ט כ	10
N-Nitroso-di-n-propylamine	10	ט כ	10	4-Nitroaniline	10	ט כ	10
Hexachloroethane	10	ט כ	10	4,6-Dinitro-2-methylphenol	. 2	5 U	25
Nitrobenzene	10	ט כ	10	N-Nitrosodiphenylamine (1)	10	ט כ	10
Isophorone	10	ט כ	10	4-Bromophenyl-phenylether	10	ט כ	10
2-Nitrophenol	10	ט כ	10	Hexachlorobenzene	10	ט כ	10
2,4-Dimethylphenol	10	ט כ	10	Pentachlorophenol	2	5 U	25
Benzoic Acid	10	ט כ	10	Phenanthrene	10	ט כ	10
bis(2-Chloroethoxy)methane	10	υ c	10	Anthracene	10	ט כ	10
2,4-Dichlorophenol	10	ט כ	10	Di-n-butylphthalate	10	ט כ	10
1,2,4-Trichlorobenzene	10	ט כ	10	Fluoranthene	10	ט כ	10
Naphthalene	10	ט כ	10	Pyrene	10	ט כ	10
4-Chloroaniline	10	ט כ	10	Butylbenzylphthalate	10	ט כ	10
Hexachlorobutadiene	10	ט כ	10	3,3'-Dichlorobenzidine	10	ט כ	10
4-Chloro-3-methylphenol	10	ט כ	10	Benzo(a)anthracene	10	ט כ	10
2-Methylnaphthalene	1	ט כ	10	Chrysene	10	ט כ	10
Hexachlorocyclopentadiene	10	υ σ	10	bis(2-Ethylhexyl)phthalate	1	ว ซ	10
2,4,6-Trichlorophenol	1	ט כ	10	Di-n-octylphthalate	10	ט כ	10
2,4,5-Trichlorophenol	10	ט כ	10	Benzo(b)fluoranthene	1	ט כ	10
2-Chloronaphthalene	1	υ σ	10	Benzo(k)fluoranthene	1	ט כ	10
2-Nitroaniline	2	5 U	25	Benzo(a)pyrene	1	ט כ	10
Dimethylphthalate	1	υ σ	10	Indeno(1,2,3-cd)pyrene	1	ט כ	10
Acenaphthylene	10	υ α	10	Dibenzo(a,h)anthracene	1	υ σ	10
				Benzo(g,h,i)perylene	1	ט כ	10

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1600 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	94	35 - 114			
2-Fluorobiphenyl	78	43 - 116			
Terphenyl-D14	76	33 - 141			
Phenol-D5	93	10 - 94			
2-Fluorophenol	80	21 - 100			
2,4,6-Tribromophenol	74	10 - 123			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 8 of 51

Company: IT CORPORATION

Date: 01/10/94

UNITS:

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-12-151 409832-003-01

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1600

SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER PREP DATE: 12/16/93 ANALYSIS DATE: 01/05/94 DILUTION FACTOR: 1.00000

MG/L			Reporting
	Result	Qual	Limit
Aluminum	5.9		0.20
Barium	0.35		0.20
Cadmium	0.0050	UN	0.0050
Calcium	61	N	5.0
Chromium	0.014	N	0.010
Copper	0.025	UN	0.025
Iron	13		0.10
Magnesium	45		5.0
Manganese	0.23	N	0.015
Nickel	0.040	UN	0.040
Potassium	5.0	U	5.0
Selenium	0.10	N	0.10
Silver	0.010	UN	0.010
Sodium	59		5.0
Zinc	0.022	N	0.020

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

SAMPLE ID: A1601

SAMPLE DATE: 12/10/93 13:55:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric		520	10	MG/L as CaCO3	12/15/93	EPA310_1
TPH - IR		1.00	1.0	MG/L	12/27/93	EPA418_1
Phenolics		0.0100	0.010	MG/L	01/06/94	EPA9066
Chloride by Ion Chrom.		87	10	MG/L	12/18/93	EPA300_0
Chemical Oxygen Demand		35	25	MG/L	12/28/93	EPA410_4
Chromium VI		0.0100	0.010	MG/L	12/11/93	EPA7196
Nitrate and Nitrite		2.9	0.50	MG/L	12/14/93	EPA353_2
Silica		7.3	2.0	MG/L	12/29/93	370_1
Sulfate by Ion Chrom.		110	5.0	MG/L	12/16/93	EPA300_0
Total Dissolved Solids		630	10	MG/L	12/14/93	EPA160_1
Total Kjeldahl Nitrogen		0.38	0.25	MG/L	01/07/94	EPA351_3
Total Organic Carbon		3.0	1.0	MG/L	12/20/93	EPA415_1
Total Suspended Solids		190	10	MG/L	12/14/93	EPA160_2
Total Phosphorus		0.15	0.10	MG/L	01/07/94	EPA365 _3

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1601
SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/18/93
DILUTION FACTOR: 1.0

UNITS: UG/L

	Reporting					Reporting	
	Result	Qual	Limit		Result	Qual	Limit
Chloromethane	1	o u	10	1,2-Dichloropropane	7	.0	5
Bromomethane	1	o u	10	trans-1,3-Dichloropropene		5 1	υ 5
Vinyl chloride	1	0 U	10	Trichloroethene	830	30 1	D 500
Chloroethane	1	0 U	10	Chlorodibromomethane		5 1	υ 5
Methylene chloride	1	0 U	10	1,1,2-Trichloroethane	9	.0	5
Acetone	10	0 υ	100	Benzene	5	. 4	5
Carbon disulfide		5 บ	5	cis-1,3-Dichloropropene		5 1	υ 5
1,1-Dichloroethene	5.	7	5	2-Chloroethylvinyl ether	:	10 1	U 10
,1-Dichloroethane		5 ປ	5	Bromoform		5 1	U 5
crans-1,2-Dichloroethene	13	0	5	2-Hexanone	!	50 I	υ 50
cis-1,2-Dichloroethene	160	0 D	500	4-Methyl-2-pentanone	!	50 1	U 50
Chloroform	4.	8 J	5	Tetrachloroethene	4	.4	J 5
1,2-Dichloroethane	50	0	25	1,1,2,2-Tetrachloroethane		5 1	U 5
2-Butanone	10	0 U	100	Toluene	1	.3 .	J 5
1,1,1-Trichloroethane		5 บ	5	Chlorobenzene	2:	20	25
Carbon tetrachloride		5 บ	5	Ethylbenzene		5 1	U 5
Vinyl acetate	1	υ 0	10	Styrene		5 1	v 5
Dichlorobromomethane		5 บ	7 5	Xvlenes, total		5 1	U 5

Surrogates	% Recovery	Limits			
TOLUENE-D8	97	88 - 110			
BROMOFLUOROBENZENE	97	86 - 114			
1,2-DICHLOROETHANE-D4	95	76 - 114			

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-12-151 409832-003-01

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1601 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/15/93 ANALYSIS DATE: 12/22/93 DILUTION FACTOR: 1.0

DILUTION FACTOR:	1.0	_				,	Poport inc
UNITS: UG/L	~14		eporting		Result	Qual	Reporting Limit
	Result	Quai	Limit		Result	Quai	Limit
Phenol	10	υ (10	2,6-Dinitrotoluene	10	ט כ	10
bis(2-Chloroethyl)ether	10	U	10	3-Nitroaniline	25	5 U	25
2-Chlorophenol	10	U	10	Acenaphthene	10	ט כ	10
1,3-Dichlorobenzene	53	}	10	2,4-Dinitrophenol	2!	5 U	25
1,4-Dichlorobenzene	290	D	200	4-Nitrophenol	2	5 U	25
Benzyl alcohol	10	U (10	Dibenzofuran	10	ט כ	10
1,2-Dichlorobenzene	1900) D	200	2,4-Dinitrotoluene	10	ט כ	10
2-Methylphenol	10	U	10	Diethylphthalate	10	ט כ	10
is(2-Chloroisopropyl)ethe	r 10	U	10	4-Chlorophenyl-phenylether	: 10	ט כ	10
4-Methylphenol	10	U	10	Fluorene	10	ט כ	10
N-Nitroso-di-n-propylamine	10) U	10	4-Nitroaniline	10	ט כ	10
Hexachloroethane	10) U	10	4,6-Dinitro-2-methylphenol	2!	5 U	25
Nitrobenzene	10	U (10	N-Nitrosodiphenylamine (1)	10	ט כ	10
Isophorone	10	U	10	4-Bromophenyl-phenylether	10	ט כ	10
2-Nitrophenol	10	U	10	Hexachlorobenzene	10	ט כ	10
2,4-Dimethylphenol	10	U	10	Pentachlorophenol	2	5 U	25
Benzoic Acid	10) U	10	Phenanthrene	10	ט כ	10
bis(2-Chloroethoxy)methane	10) U	10	Anthracene	10	ט כ	10
2,4-Dichlorophenol	10	U	10	Di-n-butylphthalate	10	ט כ	10
1,2,4-Trichlorobenzene	10) U	10	Fluoranthene	10	ט כ	10
Naphthalene	10) U	10	Pyrene	10	ט כ	10
4-Chloroaniline	10) U	10	Butylbenzylphthalate	10	ט כ	10
Hexachlorobutadiene	10) U	10	3,3'-Dichlorobenzidine	10	ט כ	10
4-Chloro-3-methylphenol	10) U	10	Benzo(a)anthracene	10	ט כ	10
2-Methylnaphthalene	10) U	10	Chrysene	10	ט כ	10
Hexachlorocyclopentadiene	10) U	10	bis(2-Ethylhexyl)phthalate	= 10	υ c	10
2,4,6-Trichlorophenol	10) U	10	Di-n-octylphthalate	10	U C	10
2,4,5-Trichlorophenol	10) ซ	10	Benzo(b)fluoranthene	10	υ c	10
2-Chloronaphthalene	10) บ	10	Benzo(k)fluoranthene	10	o u	10
2-Nitroaniline	25	υ	25	Benzo(a)pyrene	10	o u	10
Dimethylphthalate	10) U	10	Indeno(1,2,3-cd)pyrene	10	υ σ	10
Acenaphthylene	10) U	10	Dibenzo(a,h)anthracene	10	o u	10
				Benzo(g,h,i)perylene	10	u c	10

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1601 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits			
Nitrobenzene-D5	103	35 - 114			
2-Fluorobiphenyl	82	43 - 116			
Terphenyl-D14	82	33 - 141			
Phenol-D5	97*	10 - 94			
2-Fluorophenol	39	21 - 100			
2,4,6-Tribromophenol	38	10 - 123			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}\mbox{\ensuremath{-}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Referenced notes for these results:

High recovery of phenol-d5 may have been due to internal standard suppression. Analysis at dilution gave recoveries of 85% and 75%.

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Company: IT CORPORATION

Date: 01/10/94

UNITS:

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1601
SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER
PREP DATE: 12/16/93
ANALYSIS DATE: 01/05/94
DILUTION FACTOR: 1.00000

MG/L			Reporting
	Result	Qual	Limit
Aluminum	8.2		0.20
Barium	0.21		0.20
Cadmium	0.0050	UN	0.0050
Calcium	48	N	5.0
Chromium	0.040	N	0.010
Copper	0.043	N	0.025
Iron	11		0.10
Magnesium	43		5.0
Manganese	0.14	N	0.015
Nickel	0.040	UN	0.040
Potassium	5.0	U	5.0
Selenium	0.10	UN	0.10
Silver	0.010	UN	0.010
Sodium	110		5.0
Zinc	0.024	N	0.020

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

SAMPLE ID: A1602

SAMPLE DATE: 12/10/93 13:55:00

SAMPLE MATRIX: WATER

	Note	Reporting		Date	Method
Test Name	<u>Ref</u> <u>Result</u>	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric	330	10	MG/L as CaCO3	12/15/93	EPA310_1
TPH - IR	1.00	1.0	MG/L	12/27/93	EPA418_1
Phenolics	0.0100	0.010	MG/L	01/06/94	EPA9066
Chloride by Ion Chrom.	89	10	MG/L	12/18/93	EPA300 0
Chemical Oxygen Demand	25U	25	MG/L	12/28/93	EPA410_4
Chromium VI	0.0100	0.010	MG/L	12/11/93	EPA7196
Nitrate and Nitrite	2.7	0.50	MG/L	12/14/93	EPA353 2
Silica	· 6 . 9	2.0	MG/L	12/29/93	370 1
Sulfate by Ion Chrom.	230	10	MG/L	12/16/93	EPA300 0
Total Dissolved Solids	660	10	MG/L	12/14/93	EPA160 1
Total Kjeldahl Nitrogen	0.250	0.25	MG/L	01/07/94	EPA351 3
Total Organic Carbon	3.0	1.0	MG/L	12/20/93	EPA415 1
Total Suspended Solids	250	10	MG/L	12/14/93	EPA160 2
Total Phosphorus	0.100	0.10	MG/L	01/07/94	EPA365_3

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1602 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER ANALYSIS DATE: 12/18/93 DILUTION FACTOR: 1.0

UNITS: UG/L

ONTID: 00/1							
		R	eporting			R	eporting
	Result Qua	al	Limit		Result Q	ual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane	7.3		5
Bromomethane	10	U	10	trans-1,3-Dichloropropene	5	IJ	_
Vinyl chloride	10	U	10	Trichloroethene	8900	D	_
Chloroethane	10	U	10	Chlorodibromomethane	5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane	7.3		5
Acetone	100	ប	100	Benzene	5.7		5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene	5	U	5
1,1-Dichloroethene	6.0		5	2-Chloroethylvinyl ether	10	U	10
,1-Dichloroethane	5	U	5	Bromoform	5	U	5
trans-1,2-Dichloroethene	140		5	2-Hexanone	50	U	50
cis-1,2-Dichloroethene	1700	D	500	4-Methyl-2-pentanone	50	U	50
Chloroform	4.8	J	5	Tetrachloroethene	4.7	J	5
1,2-Dichloroethane	550		25	1,1,2,2-Tetrachloroethane	5	U	5
2-Butanone	100	υ	100	Toluene	1.5	J	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	240		25
Carbon tetrachloride	5	U	5	Ethylbenzene	5	U	5
Vinyl acetate	10	U	10	Styrene	5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total	5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	100	88 - 110
BROMOFLUOROBENZENE	100	86 - 114
1,2-DICHLOROETHANE-D4	95	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1602 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/15/93 ANALYSIS DATE: 12/22/93 DILUTION FACTOR: 1.0

UNITS: UG/L		R	eporting			F	Reporting
	Result	Qual	Limit		Result	Qual	Limit
Phenol	1			2,6-Dinitrotoluene	1		10
bis(2-Chloroethyl)ether	1	-		3-Nitroaniline	2		25
2-Chlorophenol	1	_		Acenaphthene	1:	-	10
1,3-Dichlorobenzene	4	_	10	2,4-Dinitrophenol	2		25
1,4-Dichlorobenzene	25	_		4-Nitrophenol	2		25
Benzyl alcohol	1	-		Dibenzofuran	1	-	10
1,2-Dichlorobenzene	170			2,4-Dinitrotoluene	10		10
2-Methylphenol	10	_		Diethylphthalate	10		10
is(2-Chloroisopropyl)ethe		-		4-Chlorophenyl-phenylether			10
4-Methylphenol	1			Fluorene	10		10
N-Nitroso-di-n-propylamine		-		4-Nitroaniline	10	-	10
Hexachloroethane	10			4,6-Dinitro-2-methylphenol		_	25
Nitrobenzene	1			N-Nitrosodiphenylamine (1)	10	ט כ	10
Isophorone	10	_	10	4-Bromophenyl-phenylether	10		10
2-Nitrophenol	10	_		Hexachlorobenzene	10	-	10
2,4-Dimethylphenol	10		10	Pentachlorophenol	2	5 U	25
Benzoic Acid	10	ט כ	10	Phenanthrene	10	υ 0	10
bis(2-Chloroethoxy)methane	10	ט כ	10	Anthracene	10	υ 0	10
2,4-Dichlorophenol	10	ט כ	10	Di-n-butylphthalate	10	ט כ	10
1,2,4-Trichlorobenzene	1	ט כ	10	Fluoranthene	10	ט כ	10
Naphthalene	10	ט כ	10	Pyrene	10	ט כ	10
4-Chloroaniline	10	ט כ	10	Butylbenzylphthalate	10	ט כ	10
Hexachlorobutadiene	10	ט כ	10	3,3'-Dichlorobenzidine	10	υ c	10
4-Chloro-3-methylphenol	10	ט כ	10	Benzo(a)anthracene	10	U C	10
2-Methylnaphthalene	10	ט כ	10	Chrysene	10	ט כ	10
Hexachlorocyclopentadiene	10	ט כ	10	bis(2-Ethylhexyl)phthalate	1 0	ט כ	10
2,4,6-Trichlorophenol	10	ט כ	10	Di-n-octylphthalate	10	ט כ	10
2,4,5-Trichlorophenol	10	ט כ	10	Benzo(b)fluoranthene	10	ט כ	10
2-Chloronaphthalene	10	ט כ	10	Benzo(k)fluoranthene	10	ט כ	10
2-Nitroaniline	2	5 ซ	25	Benzo(a)pyrene	10	ט כ	10
Dimethylphthalate	10	υ 0	10	Indeno(1,2,3-cd)pyrene	10	υ c	10
Acenaphthylene	10	ט כ	10	Dibenzo(a,h)anthracene	10	ט כ	10
				Benzo(g,h,i)perylene	10	υ c	10

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1602 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	100	35 - 114
2-Fluorobiphenyl	80	43 - 116
Terphenyl-D14	70	33 - 141
Phenol-D5	106*	10 - 94
2-Fluorophenol	86	21 - 100
2,4,6-Tribromophenol	76	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Referenced notes for these results:

High recovery of phenol-d5 may have been due to internal standard suppression. Analysis at dilution gave recoveries of 104% and 92%.

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Company: IT CORPORATION

Date: 01/10/94

UNITS:

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01

Work Order: B3-12-151

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1602 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER PREP DATE: 12/16/93 ANALYSIS DATE: 01/05/94 DILUTION FACTOR: 1.00000

		Reporting
Result	Qual	Limit
5.1		0.20
0.19		0.20
0.0050	UN	0.0050
58	N	5.0
0.029	N	0.010
0.049	N	0.025
5.5		0.10
52		5.0
0.10	N	0.015
0.040	UN	0.040
5.0	U	5.0
0.10	UN	0.10
0.010	UN	0.010
130		5.0
0.021	N	0.020
	5.1 0.19 0.0050 58 0.029 0.049 5.5 52 0.10 0.040 5.0 0.10	5.1 0.19 0.0050 UN 58 N 0.029 N 0.049 N 5.5 52 0.10 N 0.040 UN 5.0 U 0.10 UN 0.10 UN 130

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

(512) 892-6684 409832-003-01 Work Order: B3-12-151

SAMPLE ID: A1603

SAMPLE DATE: 12/10/93 14:30:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric		380	10	MG/L as CaCO3	12/15/93	EPA310_1
TPH - IR		1.00	1.0	MG/L	12/27/93	EPA418_1
Phenolics		0.0100	0.010	MG/L	01/06/94	EPA9066
Chloride by Ion Chrom.		34	4.0	MG/L	12/16/93	EPA300_0
Chemical Oxygen Demand		25U	25	MG/L	12/28/93	EPA410_4
Chromium VI		0.0100	0.010	MG/L	12/11/93	EPA7196
Nitrate and Nitrite		3.8	0.50	MG/L	12/14/93	EPA353_2
Silica		4.3	2.0	MG/L	12/29/93	370 1
Sulfate by Ion Chrom.		24	4.0	MG/L	12/16/93	EPA300 0
Total Dissolved Solids		450	10	MG/L	12/14/93	EPA160 1
Total Kjeldahl Nitrogen		0.250	0.25	MG/L	01/10/94	EPA351 3
Total Organic Carbon		1.2	1.0	MG/L	12/20/93	EPA415 1
Total Suspended Solids		160	10	MG/L	12/14/93	EPA160_2
Total Phosphorus		0.100	0.10	MG/L	01/10/94	EPA365_3

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1603
SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/18/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		R	eporting			1	Reporting
	Result Q	ual	Limit		Result	Qual	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5 1	J 5
Bromomethane	10	υ	10	trans-1,3-Dichloropropene		5 1	y 5
Vinyl chloride	10	U	10	Trichloroethene	9	96	5
Chloroethane	10	U	10	Chlorodibromomethane		5 1	J 5
Methylene chloride	10	υ	10	1,1,2-Trichloroethane		5 1	J 5
Acetone	100	U	100	Benzene		5 1	J 5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5 1	J 5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether	:	LO 1	U 10
,1-Dichloroethane	5	U	5	Bromoform		5 1	J 5
crans-1,2-Dichloroethene	3.5	J	5	2-Hexanone	5	50 T	J 50
cis-1,2-Dichloroethene	39		5	4-Methyl-2-pentanone	9	50 t	J 50
Chloroform	5	U	5	Tetrachloroethene		5 t	J 5
1,2-Dichloroethane	2.0	J	5	1,1,2,2-Tetrachloroethane		5 (J 5
2-Butanone	100	U	100	Toluene		5 (J 5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene	1.	.2	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5 1	J 5
Vinyl acetate	10	U	10	Styrene		5 1	J 5
Dichlorobromomethane	5	U	5	Xylenes, total		5 1	J 5

Surrogates	% Recovery	Limits
TOLUENE-D8	96	88 - 110
BROMOFLUOROBENZENE	97	86 - 114
1,2-DICHLOROETHANE-D4	101	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1603

SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/15/93 ANALYSIS DATE: 12/23/93 DILUTION FACTOR: 1.0

UG/L UNITS: Reporting Reporting Result Qual Limit Result Qual Limit 10 U 10 Phenol 10 U 10 2.6-Dinitrotoluene П 25 25 bis(2-Chloroethyl)ether 10 U 10 3-Nitroaniline 10 U 10 2-Chlorophenol 10 IJ 10 Acenaphthene 25 TT 25 1,3-Dichlorobenzene 10 U 10 2,4-Dinitrophenol 1,4-Dichlorobenzene 10 IJ 10 4-Nitrophenol 25 TT 25 10 10 Ħ Benzyl alcohol 10 U 10 Dibenzofuran 10 10 1,2-Dichlorobenzene 10 Ħ 10 2,4-Dinitrotoluene 10 2-Methylphenol 10 U 10 Diethylphthalate 10 IJ is(2-Chloroisopropyl)ether 10 U 10 4-Chlorophenyl-phenylether 10 IJ 10 10 U 10 _-Methylphenol 10 U 10 Fluorene 10 10 N-Nitroso-di-n-propylamine TT U 10 10 4-Nitroaniline 25 U 25 Hexachloroethane 10 U 10 4,6-Dinitro-2-methylphenol 10 TT 10 Nitrobenzene 10 TT 10 N-Nitrosodiphenylamine (1) Isophorone 10 U 10 4-Bromophenyl-phenylether 10 U 10 2-Nitrophenol 10 TT 10 10 U 10 Hexachlorobenzene 25 25 2,4-Dimethylphenol 10 U 10 Pentachlorophenol TT 10 TT 10 Benzoic Acid 10 U 10 Phenanthrene bis(2-Chloroethoxy)methane 10 U 10 10 Ħ 10 Anthracene 2,4-Dichlorophenol 10 U 10 Di-n-butvlphthalate 10 Ħ 10 1,2,4-Trichlorobenzene 10 TT 10 Fluoranthene 10 TT 10 10 10 Naphthalene 10 U 10 TT Pvrene 4-Chloroaniline 10 10 10 U 10 Butylbenzylphthalate 3,3'-Dichlorobenzidine 10 Hexachlorobutadiene 10 10 П IJ 10 4-Chloro-3-methylphenol 10 10 10 IJ 10 Benzo(a)anthracene 2-Methylnaphthalene 10 U 10 10 Ħ 10 Chrysene Hexachlorocyclopentadiene 10 U 10 bis(2-Ethylhexyl)phthalate 10 10 Di-n-octylphthalate 10 TT 10 2,4,6-Trichlorophenol 10 U 10 2,4,5-Trichlorophenol 10 TT 10 10 U 10 Benzo(b) fluoranthene 10 TT 10 2-Chloronaphthalene 10 U 10 Benzo(k)fluoranthene 2-Nitroaniline 10 10 25 U 25 Benzo(a)pyrene Dimethylphthalate 10 IJ 10 U 10 10 Indeno(1,2,3-cd)pyrene Acenaphthylene 10 U 10 10 U 10 Dibenzo(a,h)anthracene U 10 10 Benzo(g,h,i)perylene

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1603

SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	93	35 - 114
2-Fluorobiphenyl	77	43 - 116
Terphenyl-D14	84	33 - 141
Phenol-D5	89	10 ~ 94
2-Fluorophenol	77	21 - 100
2,4,6-Tribromophenol	76	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 23 of 51

Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1603

SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER
PREP DATE: 12/16/93
ANALYSIS DATE: 01/05/94
DILUTION FACTOR: 1.00000

DILUTION FACTOR:	1.00000			
UNITS: MG/L				Reporting
		Result	Qual	Limit
Aluminum	ı	1.4		0.20
Barium		0.23		0.20
Cadmium		0.0050	UN	0.0050
Calcium		59	N	5.0
Chromium	1	0.010	UN	0.010
Copper		0.025	UN	0.025
Iron		2.0		0.10
Magnesiu	m	33		5.0
Manganes	e	0.048	N	0.015
Nickel		0.040	UN	0.040
Potassiu	m	5.0	U	5.0
Selenium	l	0.10	UN	0.10
Silver		0.010	UN	0.010
Sodium		46		5.0
Zinc		0.020	UN	0.020

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA < 0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-12-151

SAMPLE ID: A1604

SAMPLE DATE: 12/10/93 14:45:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric		500	10	MG/L as CaCO3	12/15/93	EPA310 1
TPH - IR		1.00	1.0	MG/L	12/27/93	EPA418 1
Phenolics		0.0100	0.010	MG/L	01/06/94	EPA9066
Chloride by Ion Chrom.		57	10	MG/L	12/18/93	EPA300 0
Chemical Oxygen Demand		25U	25	MG/L	12/28/93	EPA410 4
Chromium VI		0.0100	0.010	MG/L	12/11/93	EPA7196
Nitrate and Nitrite		2.6	0.50	MG/L	12/14/93	EPA353_2
Silica		11	5.0	MG/L	12/29/93	370_1
Sulfate by Ion Chrom.		37	5.0	MG/L	12/16/93	EPA300 0
Total Dissolved Solids		650	10	MG/L	12/14/93	EPA160 1
Total Kjeldahl Nitrogen		0.25U	0.25	MG/L	01/10/94	EPA351 3
Total Organic Carbon		1.6	1.0	MG/L	12/20/93	EPA415_1
Total Suspended Solids		42	10	MG/L	12/14/93	EPA160_2
Total Phosphorus		0.100	0.10	MG/L	01/10/94	EPA365_3

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1604 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER ANALYSIS DATE: 12/18/93 DILUTION FACTOR: 1.0

UNITS: UG/L

		Re	eporting				Re	porting
	Result Qua	1	Limit		Result	Qual	•	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene	•	99		5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	24		5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	95	88 - 110
BROMOFLUOROBENZENE	96	86 - 114
1,2-DICHLOROETHANE-D4	98	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' - positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1604 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/15/93 ANALYSIS DATE: 12/23/93 DILUTION FACTOR: 1.0

1.0	_					Reporting
				Dogu 1+		
Kesuit	Quar	Limit		Kesuic	Quai	LIMIC
10	U	10	2,6-Dinitrotoluene	1	υ σ	10
10	U	10	3-Nitroaniline	2	5 U	25
10	U	10	Acenaphthene	1	υ 0	10
10	U	10	2,4-Dinitrophenol	2	5 U	25
10	U	10	4-Nitrophenol	2	5 U	25
10	U	10	Dibenzofuran	1	υ 0	10
10	U	10	2,4-Dinitrotoluene	1	ט ס	10
10	U	10	Diethylphthalate	1	o u	10
er 10	U	10	4-Chlorophenyl-phenylether	: 1	ט ס	10
10	U	10	Fluorene	1	ט ס	
e 10	U	10	4-Nitroaniline	1	υ 0	10
10	U	10	4,6-Dinitro-2-methylphenol	L 2	5 U	
10	U	10	N-Nitrosodiphenylamine (1)) 1	ט ס	10
10	U (10	4-Bromophenyl-phenylether	1	0 U	
10	U	10	Hexachlorobenzene	1	U 0	10
10	U (10	Pentachlorophenol	2	5 บ	25
10	U	10	Phenanthrene	1	U 0	10
e 10) U	10	Anthracene	1	υ 0	10
10) U	10	Di-n-butylphthalate	1	0 U	10
10	U	10	Fluoranthene	1	0 U	
10	U	10	Pyrene	1	0 U	10
10	U	10	Butylbenzylphthalate	1	0 U	
10	U	10	3,3'-Dichlorobenzidine	1	0 U	10
10	υ	10	Benzo(a)anthracene	1	υ 0	10
	U	10	Chrysene	1	υ 0	
10	U	10	bis(2-Ethylhexyl)phthalate	a 1	ט ס	10
10	U	10	Di-n-octylphthalate	1	υ 0	10
10	U	10	Benzo(b)fluoranthene	1	υ 0	
10	U	10	Benzo(k)fluoranthene	1	υ 0	
25	υ	25	Benzo(a)pyrene	1	ט ס	
10	U	10	Indeno(1,2,3-cd)pyrene	_	_	
10	U	10	Dibenzo(a,h)anthracene	_		
			Benzo(g,h,i)perylene	1	0 υ	10
	Result 10 10 10 10 10 10 10 10 10 10 10 10 10	Result Qual 10 U 10	Result Qual Limit 10	Result Qual Limit 10 U 10 2,6-Dinitrotoluene 10 U 10 3-Nitroaniline 10 U 10 Acenaphthene 10 U 10 4-Nitrophenol 10 U 10 Dibenzofuran 10 U 10 Diethylphthalate er 10 U 10 4-Chlorophenyl-phenylether 10 U 10 4-Nitroaniline er 10 U 10 4-Nitroaniline 10 U 10 4-Chlorophenyl-phenylether 10 U 10 4-Chlorophenyl-phenylether 10 U 10 4-Sitroaniline 10 U 10 4-Sitroaniline 10 U 10 4-Bromophenyl-phenylether 10 U 10 Hexachlorobenzene 10 U 10 Hexachlorobenzene 10 U 10 Phenanthrene 10 U 10 Phenanthrene 10 U 10 Anthracene 10 U 10 Fluoranthene 10 U 10 Butylbenzylphthalate 10 U 10 Butylbenzylphthalate 10 U 10 Benzo(a)anthracene 10 U 10 Benzo(b)fluoranthene	Result Qual Limit Result Result Qual Limit Result	Result Qual Limit Result Qual Qual Limit Result Qual Qual Limit Result Qual Qu

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: KPA8270

SAMPLE ID: A1604
SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits		
Nitrobenzene-D5	97	35 - 114		
2-Fluorobiphenyl	78	43 - 116		
Terphenyl-D14	89	33 - 141		
Phenol-D5	90	10 - 94		
2-Fluorophenol	77	21 - 100		
2,4,6-Tribromophenol	68	10 - 123		

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1604

UNITS:

SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER
PREP DATE: 12/16/93
ANALYSIS DATE: 01/05/94
DILUTION FACTOR: 1.00000

MG/L			Reporting
	Result	Qual	Limit
Aluminum	0.95		0.20
Barium	0.24		0.20
Cadmium	0.0050	UN	0.0050
Calcium	80	N	5.0
Chromium	0.010	UN	0.010
Copper	0.025	UN	0.025
Iron	1.1		0.10
Magnesium	52		5.0
Manganese	0.065	N	0.015
Nickel	0.040	UN	0.040
Potassium	1.7		5.0
Selenium	0.10	UN	0.10
Silver	0.010	UN	0.010
Sodium	43		5.0
Zinc	0.020	UN	0.020

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA < 0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

SAMPLE ID: A1604-MS

SAMPLE DATE: 12/10/93 14:45:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric	1	510	10	MG/L AS CACO3	12/15/93	EPA310_1
TPH - IR		90		% REC	12/27/93	EPA418_1
Phenolics		90		% REC	01/06/94	EPA9066
Chloride by Ion Chrom.		99		% REC	12/18/93	EPA300_0
Chemical Oxygen Demand		106		% REC	12/28/93	EPA410 4
Chromium VI		98		% REC	12/11/93	EPA7196
Nitrate and Nitrite		96		% REC	12/14/93	EPA353_2
Silica		93		% REC	12/29/93	370_1
Sulfate by Ion Chrom.		86		% REC	12/16/93	EPA300_0
Total Dissolved Solids	2	620	10	MG/L	12/14/93	EPA160_1
Total Kjeldahl Nitrogen		92		% REC	01/10/94	EPA351_3
Total Organic Carbon		114		% REC	12/20/93	EPA415_1
Total Suspended Solids	3	38	10	MG/L	12/14/93	EPA160_2
Total Phosphorus		99		% REC	01/10/94	EPA365_3

Referenced notes for these results:

- 1 Duplicate analysis performed in lieu of a matrix spike.
- 2 Duplicate analysis performed in lieu of a matrix spike.
- 3 Duplicate analysis performed in lieu of a matrix spike.

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1604-MS
SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/18/93
DILUTION FACTOR: 1.0

UNITS: % REC

Result				Result
1,1-Dichloroethene	100	Trichloroe Benzene Toluene Chlorobenz		85 97 93 95
	Surrogates TOLUENE-D8 BROMOFLUOROBENZENE	% Recovery 96 98	Limits 88 - 110 86 - 114	

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample

99

76 - 114

- 'blank' positive result
 - * Surrogate recovery is outside QC limit

1,2-DICHLOROETHANE-D4

- D compound identified at a secondary dilution factor
- E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1604-MS
SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/15/93
ANALYSIS DATE: 12/23/93
DILUTION FACTOR: 1.0

UNITS: % REC

Result			Result
Phenol	83	Acenaphthene	86
2-Chlorophenol	90	4-Nitrophenol	73
1,4-Dichlorobenzene	71	2,4-Dinitrotoluene	69
N-Nitroso-di-n-propylamine	83	Pentachlorophenol	68
1,2,4-Trichlorobenzene	73	Pyrene	90
4-Chloro-3-methylphenol	88	-	

Surrogates	% Recovery	Limits
Nitrobenzene-D5	91	35 - 114
2-Fluorobiphenyl	73	43 - 116
Terphenyl-D14	84	33 - 141
Phenol-D5	80	10 - 94
2-Fluorophenol	74	21 - 100
2,4,6-Tribromophenol	65	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/10/94

UNITS:

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684 Work Order: B3-12-151 409832-003-01

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1604-MS SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER PREP DATE: 12/16/93 ANALYSIS DATE: 01/05/94 DILUTION FACTOR: 1.00000

% REC

% REC	Result
Aluminum	100
Barium	86
Cadmium	79
Calcium	121
Chromium	80
Copper	80
Iron	90
Magnesium	111
Manganese	79
Nickel	77
Potassium	96
Selenium	72
Silver	80
Sodium	99
Zinc	79

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- ${\tt N}$ spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

Referenced notes for these results:

Matrix spike recovery outside control limits due to matrix interference for analysis of cadmium, manganese, nickle, selenium, and zinc by ICPES. LCS / LCSD results and all other method Quality Control within acceptance limits.

Matrix spike recovery and % RPD for matrix spikes outside control limits due to matrix interference for analysis of calcium by ICPES. LCS / LCSD results and all other method Quality Control within acceptance limits.

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

SAMPLE ID: A1604-MSD

SAMPLE DATE: 12/10/93 14:45:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric	1	490	10	MG/L AS CACO3	12/17/93	EPA310_1
TPH - IR		92		% REC	12/27/93	EPA418_1
Phenolics		85		% REC	01/06/94	EPA9066
Chloride by Ion Chrom.		97		% REC	12/18/93	EPA300_0
Chemical Oxygen Demand		104		% REC	12/28/93	EPA410_4
Chromium VI		98		% REC	12/11/93	EPA7196
Nitrate and Nitrite		94		% REC	12/14/93	EPA353_2
Silica		81		% REC	12/29/93	370_1
Sulfate by Ion Chrom.		79		% REC	12/16/93	EPA300_0
Total Dissolved Solids	2	620	10	MG/L	12/14/93	EPA160_1
Total Kjeldahl Nitrogen		94		% REC	01/10/94	EPA351_3
Total Organic Carbon		107		% REC	12/20/93	EPA415_1
Total Suspended Solids	3	40	10	MG/L	12/14/93	EPA160_2
Total Phosphorus ·		96		% REC	01/10/94	EPA365_3

Referenced notes for these results:

- 1 Duplicate analysis performed in lieu of a matrix spike.
- 2 Duplicate analysis performed in lieu of a matrix spike.
- 3 Duplicate analysis performed in lieu of a matrix spike.

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1604-MSD
SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/18/93
DILUTION FACTOR: 1.0

UNITS: % REC

	Result		Result
1,1-Dichloroethene	100	Trichloroethene	85
		Benzene	98
		Toluene	94
		Chlorobenzene	95
Con			

Surrogates	* Recovery	Limits
TOLUENE-D8	96	88 - 110
BROMOFLUOROBENZENE	96	86 - 114
1,2-DICHLOROETHANE-D4	99	76 - 114

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 35 of 51

Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

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AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

Regult

METHOD REFERENCE: EPA8270

SAMPLE ID: A1604-MSD SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/15/93
ANALYSIS DATE: 12/23/93
DILUTION FACTOR: 1.0

UNITS: % REC

144	Kesaic		
Phenol	86	Acenaphthene	88
2-Chlorophenol	93	4-Nitrophenol	78
1,4-Dichlorobenzene	78	2,4-Dinitrotoluene	69
N-Nitroso-di-n-propylamine	85	Pentachlorophenol	78
1,2,4-Trichlorobenzene	80	Pyrene	92
4-Chloro-3-methylphenol	92		

Surrogates	% Recovery	Limits
Nitrobenzene-D5	97	35 - 114
2-Fluorobiphenyl	76	43 - 116
Terphenyl-D14	83	33 - 141
Phenol-D5	76	10 - 94
2-Fluorophenol	76	21 - 100
2,4,6-Tribromophenol	73	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/10/94

UNITS:

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES AUSTIN, TX

409832-003-01 (512) 892-6684 Work Order: B3-12-151

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1604-MSD
SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER
PREP DATE: 12/16/93
ANALYSIS DATE: 01/05/94
DILUTION FACTOR: 1.00000

% REC	Result
Aluminum	92
Barium	81
Cadmium	76
Calcium	95
Chromium	76
Copper	76
Iron	84
Magnesium	93
Manganese	74
Nickel	74
Potassium	92
Selenium	72
Silver	76
Sodium	84
Zinc	75

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

Referenced notes for these results:

Matrix spike dulicate recovery outside control limits due to matrix interference for analysis of cadmium, manganese, nickle, selenium, silver, chromium, copper, and zinc by ICPES. LCS / LCSD results and all other method Quality Control within acceptance limits.

% RPD for matrix spikes outside control limits due to matrix interference for analysis of calcium by ICPES. LCS / LCSD results and all other method Quality Control within acceptance limits. Page: 37 of 51

Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

SAMPLE ID: A1605

SAMPLE DATE: 12/10/93 13:20:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric		450	10	MG/L as CaCO3	12/15/93	EPA310_1
TPH - IR		1.00	1.0	MG/L	12/27/93	EPA418_1
Phenolics		0.0100	0.010	MG/L	01/06/94	EPA9066
Chloride by Ion Chrom.		1.00	1.0	MG/L	12/16/93	EPA300_0
Chemical Oxygen Demand		25U	25	MG/L	12/28/93	EPA410_4
Chromium VI		0.0100	0.010	MG/L	12/11/93	EPA7196
Nitrate and Nitrite		0.050ប	0.050	MG/L	12/14/93	EPA353_2
Silica		0.200	0.20	MG/L	12/29/93	370_1
Sulfate by Ion Chrom.		1.00	1.0	MG/L	12/16/93	EPA300_0
Total Dissolved Solids		17	10	MG/L	12/14/93	EPA160_1
Total Kjeldahl Nitrogen		0.25ប	0.25	MG/L	01/10/94	EPA351_3
Total Organic Carbon		1.00	1.0	MG/L	12/20/93	EPA415_1
Total Suspended Solids		100	10	MG/L	12/14/93	EPA160_2
Total Phosphorus		0.100	0.10	MG/L	01/10/94	EPA365_3

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1605 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER ANALYSIS DATE: 12/18/93 DILUTION FACTOR: 1.0

UNITS: UG/L

		R	eporting	r			Re	porting
	Result	Qual	Limit		Result	Qua:	1	Limit
Chloromethane	1	ο τ	10	1,2-Dichloropropane		5	U	5
Bromomethane	1	0 υ	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	1	0 U	10	Trichloroethene		5	U	5
Chloroethane	1	0 U	10	Chlorodibromomethane		5	U	5
Methylene chloride	1	0 υ	10	1,1,2-Trichloroethane		5	U	5
Acetone	10	0 U	100	Benzene		5	U	5
Carbon disulfide		5 บ	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5 ซ	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane		5 บ	5	Bromoform		5	U	5
trans-1,2-Dichloroethene		5 ช	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene		5 ช	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform		5 บ	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5 บ	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	υ 0	100	Toluene		5	U	5
1,1,1-Trichloroethane		5 บ	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5 U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U 0	10	Styrene		5	U	5
Dichlorobromomethane		5 ช	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits		
TOLUENE-D8	94	88 - 110		
BROMOFLUOROBENZENE	96	86 - 114		
1,2-DICHLOROETHANE-D4	101	76 - 114		

Data Qualifier Key:

U - none detected

C-----

- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1605 SAMPLE DATE: 12/10/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/15/93 ANALYSIS DATE: 12/23/93 DILUTION FACTOR: 1.0

UNITS: UG/L		F	eporting			3	Reporting
	Result	Qual	Limit		Result	Qual	Limit
Phenol	1	ο τι	10	2,6-Dinitrotoluene	10	ט כ	10
bis(2-Chloroethyl)ether	_	0 U		3-Nitroaniline	2!	-	25
2-Chlorophenol	_	0 U		Acenaphthene	10	-	10
1,3-Dichlorobenzene	_	0 U		2,4-Dinitrophenol	2!	-	25
1,4-Dichlorobenzene	_	0 U		4-Nitrophenol	2!		25
Benzyl alcohol	1	0 U		Dibenzofuran	10	_	10
1,2-Dichlorobenzene	1	0 υ		2,4-Dinitrotoluene	10	ט כ	10
2-Methylphenol	1	ο υ		Diethylphthalate	10	ט כ	10
is(2-Chloroisopropyl)ethe	er 1	0 U		4-Chlorophenyl-phenylether	: 10	ง ช	10
4-Methylphenol		0 υ	10	Fluorene	10	ט כ	10
N-Nitroso-di-n-propylamine	1	0 υ	10	4-Nitroaniline	10	U	10
Hexachloroethane		0 υ	10	4,6-Dinitro-2-methylphenol	2	5 0	25
Nitrobenzene	1	0 υ	10	N-Nitrosodiphenylamine (1)		ט כ	10
Isophorone	1	0 υ	10	4-Bromophenyl-phenylether	10	ט כ	10
2-Nitrophenol	1	0 υ	10	Hexachlorobenzene	10	ט כ	10
2,4-Dimethylphenol	1	0 U	10	Pentachlorophenol	2	5 U	25
Benzoic Acid	1	0 υ	10	Phenanthrene	10	υ σ	10
bis(2-Chloroethoxy)methane	1	0 υ	10	Anthracene	10	ט כ	10
2,4-Dichlorophenol	1	0 υ	10	Di-n-butylphthalate	1.3	3 J	10
1,2,4-Trichlorobenzene	1	0 υ	10	Fluoranthene	10	ט כ	10
Naphthalene	1	0 υ	10	Pyrene	10	ט כ	10
4-Chloroaniline	1	0 U	10	Butylbenzylphthalate	10	ט כ	10
Hexachlorobutadiene	1	0 υ	10	3,3'-Dichlorobenzidine	10	ט כ	10
4-Chloro-3-methylphenol	1	0 U	10	Benzo(a)anthracene	10	ט כ	10
2-Methylnaphthalene	1	0 U	10	Chrysene	10	ט כ	10
Hexachlorocyclopentadiene	1	0 υ	10	bis(2-Ethylhexyl)phthalate	e 10	ט כ	10
2,4,6-Trichlorophenol	1	0 U	10	Di-n-octylphthalate	10	υ (10
2,4,5-Trichlorophenol	1	0 υ	10	Benzo(b)fluoranthene	10	ט כ	10
2-Chloronaphthalene	1	υ 0	10	Benzo(k)fluoranthene	10	ט כ	10
2-Nitroaniline	2	-		Benzo(a)pyrene	10	ט כ	10
Dimethylphthalate	1			Indeno(1,2,3-cd)pyrene	10		10
Acenaphthylene	1	0 υ	10	Dibenzo(a,h)anthracene	10		10
				Benzo(g,h,i)perylene	10	ט ט	10

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1605

SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER

Surrogates	<pre>% Recovery</pre>	Limits			
Nitrobenzene-D5	93	35 - 114			
2-Fluorobiphenyl	74	43 - 116			
Terphenyl-D14	85	33 - 141			
Phenol-D5	89	10 - 94			
2-Fluorophenol	77	21 - 100			
2,4,6-Tribromophenol	72	10 - 123			

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1605

SAMPLE DATE: 12/10/93
SAMPLE MATRIX: WATER
PREP DATE: 12/16/93
ANALYSIS DATE: 01/05/94
DILUTION FACTOR: 1.00000

UNITS: MG/L Reporting Result Qual Limit Aluminum 0.20 0.20 U Barium 0.20 U 0.20 Cadmium 0.0050 0.0050 UN Calcium 5.0 N 5.0 Chromium 0.010 UN 0.010 Copper 0.025 0.025 UN Iron 0.10 0.10 U Magnesium 5.0 U 5.0 Manganese 0.015 UN 0.015 Nickel 0.040 UN 0.040 Potassium 5.0 U 5.0

Data qualifier key:

Zinc

Selenium

Silver

Sodium

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance

0.10

5.0

0.010

0.020

UN

UN

U

UN

0.10

5.0

0.010

0.020

- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	<u>Ref</u>	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric		100	10	MG/L as CaCO3	12/15/93	EPA310_1
TPH - IR		1.00	1.0	MG/L	12/27/93	EPA418_1
Phenolics		0.0100	0.010	MG/L	01/06/94	EPA9066
Chloride by Ion Chrom.		1.00	1.0	MG/L	12/16/93	EPA300_0
Chemical Oxygen Demand		25 U	25	MG/L	12/28/93	EPA410_4
Chromium VI		0.0100	0.010	MG/L	12/11/93	EPA7196
Nitrate and Nitrite		0.0500	0.050	MG/L	12/14/93	EPA353_2
Silica		0.200	0.20	MG/L	12/29/93	370_1
Sulfate by Ion Chrom.		1.00	1.0	MG/L	12/16/93	EPA300_0
Total Dissolved Solids		10 U	10	MG/L	12/14/93	EPA160_1
Total Kjeldahl Nitrogen		0.25U	0.25	MG/L	01/07/94	EPA351_3
Total Organic Carbon		1.00	1.0	MG/L	12/20/93	EPA415_1
Total Suspended Solids		100	10	MG/L	12/14/93	EPA160_2
Total Phosphorus		0.100	0.010	MG/L	01/07/94	EPA365_3

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/17/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		R	eporting				Re	eporting
	Result Qua	al	Limit		Result	Qual	L	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	Ü	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	94	88 - 110
BROMOFLUOROBENZENE	92	86 - 114
1,2-DICHLOROETHANE-D4	102	76 - 114

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: WATER

EXTRACTION DATE: 12/15/93 ANALYSIS DATE: 12/29/93 DILUTION FACTOR: 1.0

_	.0						
UNITS: UG/L		R	eporting				Reporting
Re	sult	Qual	Limit		Result	Qual	Limit
Phenol	-						4.0
-	10			2,6-Dinitrotoluene	10		10
bis(2-Chloroethyl)ether	10	_		3-Nitroaniline	2!	-	25
2-Chlorophenol	10	_		Acenaphthene	10	-	10
1,3-Dichlorobenzene	10	-		2,4-Dinitrophenol	2		25
1,4-Dichlorobenzene	10	_		4-Nitrophenol	2!		25
Benzyl alcohol	10	_		Dibenzofuran	10	_	10
1,2-Dichlorobenzene	10			2,4-Dinitrotoluene	10		10
2-Methylphenol	10	-		Diethylphthalate	10		10
is(2-Chloroisopropyl)ether	10	_		4-Chlorophenyl-phenylether			10
4-Methylphenol	10			Fluorene	10	-	10
N-Nitroso-di-n-propylamine	10		10	4-Nitroaniline	10		10
Hexachloroethane	10	υ (4,6-Dinitro-2-methylphenol	_ 2!	5 U	25
Nitrobenzene	10	ט כ	10	N-Nitrosodiphenylamine (1)	10	υ 0	10
Isophorone	10	ט כ	10	4-Bromophenyl-phenylether	10	ט כ	10
2-Nitrophenol	10	ט כ	10	Hexachlorobenzene	10	ט כ	10
2,4-Dimethylphenol	10	υ (10	Pentachlorophenol	2	5 U	25
Benzoic Acid	10	ο σ	10	Phenanthrene	10	ט ָכ	10
bis(2-Chloroethoxy)methane	10	0	10	Anthracene	10	ט כ	10
2,4-Dichlorophenol	10	0 0	10	Di-n-butylphthalate	10	ט כ	10
1,2,4-Trichlorobenzene	10	υ (10	Fluoranthene	10	ט כ	10
Naphthalene	10	U	10	Pyrene	10	ט כ	10
4-Chloroaniline	10	ט כ	10	Butylbenzylphthalate	10	υ (10
Hexachlorobutadiene	10	ט כ	10	3,3'-Dichlorobenzidine	10	υ (10
4-Chloro-3-methylphenol	10	ט כ	10	Benzo(a)anthracene	10	ט כ	10
2-Methylnaphthalene	10	υ (Chrysene	10	ט כ	10
Hexachlorocyclopentadiene	10	ט כ	10	bis(2-Ethylhexyl)phthalate	. 10	ט כ	10
2,4,6-Trichlorophenol	10) U		Di-n-octylphthalate	10	ט כ	10
2,4,5-Trichlorophenol	10	ט כ		Benzo(b)fluoranthene	10	ט כ	10
2-Chloronaphthalene	10) U		Benzo(k)fluoranthene	10	ט כ	10
2-Nitroaniline	25	_		Benzo(a)pyrene	10	_	10
Dimethylphthalate	10			Indeno(1,2,3-cd)pyrene	10	_	10
Acenaphthylene	10	_		Dibenzo(a,h)anthracene	10	-	10
		•		Benzo(g,h,i)perylene	10		10
				(g,, _ , por] rome	- '	. •	

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits
Nitrobenzene-D5	82	35 - 114
2-Fluorobiphenyl	85	43 - 116
Terphenyl-D14	81	33 - 141
Phenol-D5	75	10 - 94
2-Fluorophenol	64	21 - 100
2,4,6-Tribromophenol	73	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\ensuremath{\mathtt{B}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

UNITS:

SAMPLE MATRIX: WATER
PREP DATE: 12/16/93
ANALYSIS DATE: 01/05/94
DILUTION FACTOR: 1.0

MG/L			Reporting
	Result	Qual	Limit
Aluminum	0.20	U	0.20
Barium	0.20	U	0.20
Cadmium	0.0050	U	0.0050
Calcium	5.0	U	5.0
Chromium	0.010	U	0.010
Copper	0.025	U	0.025
Iron	0.10	U	0.10
Magnesium	5.0	U	5.0
Manganese	0.015	U	0.015
Nickel	0.040	U	0.040
Potassium	5.0	U	5.0
Selenium	0.010	U	0.010
Silver	0.010	U	0.010
Sodium	5.0	U	5.0
Zinc	0.020	U	0.020

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

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Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-151

SAMPLE ID: LAB BLANK #2

SAMPLE DATE:

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric		100	10	MG/L as CaCO3	12/17/93	EPA310 1
Total Kjeldahl Nitrogen		0.25T	0.25	MG/L	01/10/94	EPA351 3
Total Phosphorus		0.100	0.10	MG/L	01/10/94	EPA365 3

Page: 48 of 51

Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME Alkalinity, Titrimetric TEST CODE 310 1

Alkalinity EPA 310.1 - Chemical Analysis of Water and Wastewater.

Titrimetric with sulfuric acid.

TEST NAME TPH - IR TEST CODE 418 1

418_1 Method 418.1: Total Recoverable Petroleum Hydorcarbons,

infrared spectrophotmetric method. Methods for the

chemical analysis of water and wastes. USEPA.

TEST NAME ICP Metals TEST CODE 6010

Metals by ICP Inductively coupled emission spectroscopy according to

Method 6010, "Test Methods for Evaluating Solid Waste

Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

Hazardous Substance Method 8240, SW-846, Test Methods for Evaluating Solid

List Volatiles Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance Method 8270, SW-846, Test Methods for Evaluating Solid

List Extractables Waste, Third Edition. Acid/Base-Neutral extraction

followed by GC/MS analysis.

TEST NAME Phenolics TEST CODE 9066

Phenolics SW-846 Method 9066. Total Recoverable Phenolics.

Colorimetric, Automated 4-AAP with Distillation.

Equivalent to EPA Method 420.2.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS GF

Page: 49 of 51

Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME Arsenic - Graphite Furnace TEST CODE AS GF

Arsenic

Graphite Furnace Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes,

EPA-600/4-82-055, December 1982.

TEST NAME Chloride by Ion Chrom.

TEST CODE CL IC

Chloride

USEPA 300.0 - The determination of inorganic anions in water by ion chromatography.

TEST NAME Chemical Oxygen Demand

TEST CODE COD

COD

EPA 410.4 - Chemical Analysis of Water and Wastewater. Colorimetric analysis for Chemical Oxygen Demand.

TEST NAME Chromium VI

TEST CODE CR VI

Chromium VI

Method 7196, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Colorimetric analysis. Equivalent to Standard Methods 3500-Cr D.

TEST NAME Mercury

TEST CODE HG AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption. Method 7470 is used for water.

Method 245.5-"Technical Additions to Methods for Chemical Analysis of Water and Wastes,"

EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK4

Method not available.

Page: 50 of 51

Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME Nitrate and Nitrite

TEST CODE NO3NO2

Nitrate + Nitrite

Method 353.2-Chemical Analysis of Water and Wastewater. Colorimetric Automated Cadmium Reduction method using Lachat autoanalyzer for NO3 and NO2 as N.

TEST NAME Lead - Graphite Furnace

TEST CODE PB_GF

Lead

EPA 7421, SW-846, Test Methods for Evaluating Solid

Wastes, Third Edition.

Graphite Furnace

EPA 239.2-Technical Additions to Methods for Chemical

Analysis of Water and Wastes," EPA-600/4-82-055,

December 1982.

TEST NAME Silica

TEST CODE SIO2

Silica

Method 370.1-Chemical Analysis of Water and Wastewater. Colorimetric Analysis. This is equal to ASTM D859B.

TEST NAME Sulfate by Ion Chrom.

TEST CODE SO4 IC

Sulfate

USEPA Method 300.0 - The Determination of Inorganic Anions in Water by Ion Chromatography.

TEST NAME Total Dissolved Solids

TEST CODE TDS

Total Dissolved

Method 160.1-Chemical Analysis of Water and Wastewater.

Solids

Gravimetric analysis.

TEST NAME Total Kjeldahl Nitrogen

TEST CODE TKN_N

Kjeldahl Nitrogen

Method 351.3-Chemical Analysis of Water and Wastewater.

Digestion and colorimetric analysis.

TEST NAME Total Organic Carbon

TEST CODE TOC

Page: 51 of 51

Company: IT CORPORATION

Date: 01/10/94

Client Work ID: D.O. 5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-151

TEST NAME Total Organic Carbon

TEST CODE TOC

Total Organic

Carbon

Method 415.1-Chemical Analysis of Water and Wastewater.

Chemical oxidation and nondispersive

infrared analysis. Equivalent to SW-846 Method 9060. Sample prep is instrument manufacturer specific.

TEST NAME Total Suspended Solids

TEST CODE TSS

Total Suspended

Solids

Method 160.2-Chemical Analysis of Water and Wastewater. Filtration and gravimetric analysis of non-filterable

residue.

TEST NAME Total Phosphorus

TEST CODE T_P

Total Phosphorus

Method 365.3-Chemical Analysis of Water and Wastewater.

Digestion and colorimetric analysis.

TEST NAME ICPES Digestion - Water TEST CODE 23005

Water Digestion

Method 3005A, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Digestion procedure for the preparation of surface and ground water samples for analysis by flame atomic absorption spectroscopy and inductively coupled plasma spectroscopy. The procedure determines total recoverable or dissolved metals.

TEST NAME GFAA Digestion - Water

TEST CODE **Z3020**

Water Digestion

Method 3020, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Acid digestion technique for

Graphite Furnace.



ANALYSIS RELJEST AND CHAIN OF CUSTODY RECORD*

Samples Shipment Date 7 12/10 /93

Project Name/No. 17 wher 5001 /409833

Sample Team Members 2 M W / TS / K K

3597

Profit Center No. 3

 \mathcal{K} 3/2/5/ Reference Document N., 314024 Page 1 of +

409832,03,01 D.O. 5001 Bill to:5

White: To accompany samples

Lab Destination 8 LTAS Auskin

Report to: 10 Trm Jennings Carrier/Waybill No. ¹³8460755800 Fed Fx Lab Contact 9 Kor May Deene 12 (105) 736-3360 Project Contact/Phone 12 Dan Mchager

ONE CONTAINER PER LINE Project Manager 4 Jimmy Toylor Purchase Order No. 6 409832, 03. 01 Required Report Date 11。 八の「ma」

							The state of the s	
Sample ¹⁴ Number	Sample ¹⁵ Description/Type	Date/Time ¹⁶ Container ¹⁷ Sample ¹⁸ Collected Type Volume	Container Type	Sample 18 Volume	Pre- ¹⁹ servative	Requested Testing ²⁰ Program	Condition on ²¹ Recgipt	Disposal ²² Record No.
A 1599	Trip Blank	00L1		140h	HCI	207 OTE8	3-5-C)	83291020
A 1600	Water / Fire Training 12/10/93	1300	Clear	(+) (+)	Hcl	8240 NOC	The 12/11/83	7
		-	4 m ber		ice	8270 Svoc	3	3146032
			7	71	Hasoy	418.1 JPH		
				500ml		9066 Phenols	का 199 199 199	
				250 M		410,4 COD		
				250ml	^	Vitrie Mither 353.2 TKN 351.3		
-}	7	->	Plaste	500ml HNOS	HNO	metaly 17000		
Special Instructions: 23	ons: ²³							
Possible Hazard Identification: ²⁴ Non-hazard J Flammable J Sk	ldentification: ²⁴ lammable 📘 Skin Irrit	24 Skin Irritant 📘 Poison B		J Unknown		Sample Disposal: ²⁵ Return to Client J Dispo	Disposal by Lab	(mos.)

Yellow: Field copy

*See back of form for special instructions

Project Specific (specify);

Unknown OC Level: 27

Turnaround Time Required: ²⁶

Rush,

Normal **X**

1. Relinquished by 28

(Signature/Affiliation)

2. Relinquished by (Signature/Affiliation)

3. Relinquished by (Signature/Affiliation)

Comments: ²⁹

Received by ²⁸

FF 4wshin Date: 13 -10 - 93

Date: Time: Date: Time:

(Signature/Affiliation)

2. Received by (Signature/Affiliation)

3. Received by (Signature/Affiliation)

Date: ,

Time:

Time:

Date:

Time:

Date:

MCA 3/15/9

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.30 314034 Page 2 of 14

8312151

	~	/ hite	: To	accor	npany	/ samp	oles	Ye	ellow:	Field (сору	·		*Se	e back	of for	m fo	r spe	cial ins	struct	ions.	
86/01/e1		Disposal 22 Record No.			133271030									83 291020	3146032							
Samples Shipment Date		Condition on 21 Receipt	J. E - E Juag	1 2																		\rightarrow
Sample		requescea rescing ∠∪ Program	Stordard Gw poremetry	7196 Cr64	SOY OYES	8270 SVOC	41(8,1 TPH	9066 Phanols	410,4 COD	/ >	Metals 6010 (7000	GW poranetaro	7196 Cr ⁶⁴	Som ones	8270 SVOC	HG1 1.811	9066 Phonols	416.4 COD	えっ	Metulo 6010/1000	aw porometers as	51
. 409832		86	ice	ادو	HC	سبب ،	H2504			→	HNO3	1,58	أدو	HCI	ice	H3504			` →	HNO3	ice	7
). <i>L</i> (0°	Sample 18	Volume	11	125ml	€ <u>₹</u>	8-5-F	7	500m1	250ml	250ml	500m	1	125m1	(4) (100)	2,5 L	7	500 ml	250m	->	500ml	1	135m1
Project No.		Type	Ploshi	\rightarrow	clear	Amber 9 lass	7			->	Ploshic	_	~	Cleor O-loss	4 mher 5 logs				/	Plustic		7
	Date/Time 16	Collected	1390	→	1330								>	1365 1355								7
inlier 5001	Sample 15	Description/Type	Well Water / Fire	· •	Field Blank								->	Well Fire Area Wooten Training	7							-
Project Name Tinlier 500	Sample 14	Number	A 1600	->	A 1605									A 1601								>

MCA 3 15.91

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

Reference Document No.30 314034 Page 3 of 4

B312151

		White	e: To a	accon	npany	samp	les	Ye	llow:	Field o	сору			*See	back	of fo	m for	spec	cial ins	tructi	ons.	
19/10/63		Disposal 22 Record No.	133241000	3146.052		-						83291020	3146032									
Samples Shipment Date		Condition on 21 Receipt	J. 8-6 2009	11/19																		
	PER LINE	Requested Testing 20 Program	SZYO VOC	8270 SUOC	418,1 TPH	4066 Phenols	415,1 COD	Nitrak 10 353,2 TKN 351,3	Metals 60,0/2000	6w parameters as	Cot 7196	8240 VOC	8270 SVOC	418.1 TPH	9066 Phonols	410.4 COD	Utrate/Nitrite 363,3	6010/7000 materia	Gw Perameters as	Cr ^{6t} 7196		
Project No. 409832,03.01		Pre-19 servative	ИС	1.ce	H2504			→	HNO3) es!	-}	HCI	ice	H2504			<u>-</u>	HNOS		7		
4038	CONTAINER	Sample 18 Volume	(તું ઉ	25 L	1	500ml	JED m	->	500ml	71	135ml	Jwgh	25L	14	500 m	250ml	_>	500 ml	71	D5ml		
Project No	ONE		Cleor Sloss	Amber	>			\rightarrow	Plastic		\rightarrow	(1001 9 1085	Huber	7			\rightarrow	P(astic		→		
		Date/Time ¹⁶ Collected	1356 1356					_			>	1430								7		
nher 5001		Sample 15 Description/Type	well pplicate								-3	Well Training Wed										\
Project Name 7 in her 500		Sample 14 Number	A 1602 DA								-7	A1603								7		

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD (cont.)*

B3/2/5-/ Reference Document No.30 3/4034 Page 4 of 4

Samples Shipment Date 13-110 /93

White: To accompany samples

			_		_	_				_		 		Dack	יטו וטו	 	101 1115	 ,, ,J	
13/10/93		Disposal 22 Record No.	3329,020	3146032															MCA 3 15 91
Samples Shipment Date		Condition on 21 Receipt	Red Twice	what 1s 11sted	Good 2-3°C.	Se RUR	Th 12/1/93						·						
Sampl	PER LINE	Requested Testing 20 Program	8240 VOC	8270 SVOC	418,17PH	9066 Phenols	21 L	Nithode / Nithink 353.3 TKN 351.3	0002/0109	Cw perenteral	Cret 7196								
739	VINER	Pre-19 servative	HC.). 32	H2504)		-)	HNOS	عنا	7								_
406	ONE CONTAINER	Sample 18 Volume	(4g)	2,5 L	7	500ml	250ml	~	500 m	1 6	lasm								
Project No. 409833	ONE	Container ¹⁷ Type	Cleor 91055	Amber glass	-			->	Plastic		->								\
											→								
nher 5001		Sample 15 Description/Type	Water / Fire Taining								\rightarrow								
Project Name Tinker 5001		Sample 14 Number	A1604								7								_

Yellow: Field copy

*See back of form for special instructions

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B	3520MS				12/21/93	
	418_1	B312151-10A	1220TPHIR1	12/20/93		
02C	310_1	B312151-11A	1217310 11 1	2/17/93	12/17/93	1.0
	9066	B312151-10A	122790661	12/27/93	01/06/94	1.0
	CL_IC	B312151-10A	1216CL_IC1	12/16/93	12/16/93	5.0
	COD	B312151-10A	1228COD2	12/28/93	12/28/93	1.0
	CR_VI	B312151-10A	1211CR_VI2	12/11/93	12/11/93	1.0
	NO3NO2	B312151-10A	1214NO3NO2	12/14/93	12/14/93	10.0
	SIO2	B312151-10A	1229SIO21B	12/29/93	12/29/93	10.0
	SO4_IC	B312151-10A	1216SO4_IC	12/16/93	12/16/93	5.0
	TDS	B312151-10A	1214TDS1	12/14/93	12/14/93	1.0
	TKN_N	B312151-10A	0105TKN N1	01/05/94	01/07/94	1.0
	TOC	B312151-10A	1220TOC3B	12/20/93		1.0
	TSS	B312151-10A	1214TSS1	12/14/93	12/14/93	1.0
	T_P	B312151-10A	0105T_P1	01/05/94	01/07/94	1.0
02D						
	AS GF	B312151-10A	121530203	12/15/93	12/19/93	1.0
	HG AA	B312151-10A	1216HGAA3	12/16/93	• •	1.0
	PB_GF	B312151-10A	121530203	12/15/93		1.0

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03в						
	418_1	B312151-10A	1220TPHIR1	12/20/93	12/27/93	1.0
03C	310_1	B312151-10A	1215310_12 1	2/15/93	12/15/93	1.0
	9066	B312151-10A	122790661	12/27/93	01/06/94	1.0
	CL_IC	B312151-10A	1216CL_IC1	12/18/93	12/18/93	10.0
	COD	B312151-10A	1228COD2	12/28/93	12/28/93	1.0
	CR_VI	B312151-10A	1211CR_VI2	12/11/93	12/11/93	
	NO3NO2	B312151-10A	1214NO3NO2	12/14/93	12/14/93	10.0
	SIO2	B312151-10A	1229SIO21B	12/29/93	12/29/93	10.0
	SO4_IC	B312151-10A	1216SO4_IC	12/16/93	12/16/93	5.0
	TDS	B312151-10A	1214TDS1	12/14/93	12/14/93	1.0
	TKN_N	B312151-10A	0105 TKN_N1	01/05/94	01/07/94	1.0
	TOC	B312151-10A	1220TOC3B	12/20/93	12/20/93	1.0
	TSS	B312151-10A	1214TSS1	12/14/93	12/14/93	1.0
	T_P	B312151-10A	0105T_P1	01/05/94	01/07/94	1.0
03D						
000	AS GF	B312151-10A	121530203	12/15/02	12/10/02	1.0
	HG AA	B312151-10A B312151-10A	121530203 1216HGAA3	12/15/93	• •	1.0
	PB_GF	B312151-10A B312151-10A		12/16/93		1.0
	. 5_0.	B312151-10A	121530203	12/15/93	12/19/93	1.0

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04B						
	418_1	B312151-10A	1220TPHIR1	12/20/93	12/27/93	1.0
04C	310_1	B312151-10A	1215310_12 1	2/15/93	12/15/93	1.0
	9066	B312151-10A	122790661	12/27/93	01/06/94	1.0
	CL_IC	B312151-10A	1216CL_IC1	12/18/93	12/18/93	10.0
	COD	B312151-10A	1228COD2	12/28/93	12/28/93	1.0
	CR_VI	B312151-10A	1211CR_VI2	12/11/93	12/11/93	1.0
	NO3NO2	B312151-10A	1214NO3NO2	12/14/93	12/14/93	10.0
	SIO2	B312151-10A	1229SIO21B	12/29/93	12/29/93	10.0
	SO4_IC	B312151-10A	1216SO4_IC	12/16/93	12/16/93	10.0
	TDS	B312151-10A	1214TDS1	12/14/93	12/14/93	1.0
	TKN_N	B312151-10A	0105TKN_N1	01/05/94	01/07/94	1.0
	TOC	B312151-10A	1220TOC3B	12/20/93	12/20/93	1.0
	TSS	B312151-10A	1214TSS1	12/14/93	12/14/93	1.0
	T_P	B312151-10A	0105T_P1	01/05/94	01/07/94	1.0
04D						
	AS GF	B312151-10A	121530203	12/15/93	12/19/93	1.0
	HG AA	B312151-10A	1216HGAA3	12/16/93		1.0
	PB_GF	B312151-10A	121530203	12/15/93		1.0

Auxiliary Data Summary 01/11/94

Work order : B312151

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
05B						
	418_1	B312151-10A	1220TPHIR1	12/20/93	12/27/93	1.0
05C	310_1	B312151-10A			12/15/93	1.0
	9066	B312151-10A	122790661	12/27/93		1.0
	CL_IC	B312151-10A	1216CL_IC1			4.0
	COD	B312151-10A	1228COD2	12/28/93	• •	
	CR_VI	B312151-10A	1211CR_VI2			
	NO3NO2	B312151-10A	1214NO3NO2	,,	• •	
	SIO2	B312151-10A	1229SIO21B	12/29/93	12/29/93	10.0
	SO4_IC	B312151-10A	1216SO4_IC	12/16/93	12/16/93	4.0
	TDS	B312151-10A	1214TDS1	12/14/93	12/14/93	1.0
	TKN_N	B312151-11A	0107 TKN_N1	01/07/94	01/10/94	1.0
	TOC	B312151-10A	1220TOC3B	12/20/93	12/20/93	1.0
	TSS	B312151-10A	1214TSS1	12/14/93	12/14/93	1.0
	T_P	B312151-11A	0107T_P1	01/07/94	01/10/94	1.0
05D						
	AS GF	B312151-10A	121530203	12/15/93	12/19/93	1.0
	HG AA	B312151-10A	1216HGAA3	12/16/93		1.0
	PB_GF	B312151-10A	121530203	12/15/93		1.0

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
06B						
	418_1	B312151-10A	1220TPHIR1	12/20/93	12/27/93	1.0
06C	310_1	B312151-10A	1215310_12	12/15/93	12/15/93	1.0
	9066	B312151-10A	122790661	12/27/93	01/06/94	1.0
	CL_IC	B312151-10A	1216CL_IC1	12/18/93	12/18/93	10.0
	COD	B312151-10A	1228COD2	12/28/93	12/28/93	1.0
	CR_VI	B312151-10A	1211CR_VI2	12/11/93	12/11/93	1.0
	NO3NO2	B312151-10A	1214NO3NO2	12/14/93	12/14/93	10.0
	SIO2	B312151-10A	1229SIO21B	12/29/93	12/29/93	25.0
	SO4_IC	B312151-10A	1216SO4_IC	12/16/93	12/16/93	5.0
	TDS	B312151-10A	1214TDS1	12/14/93	12/14/93	1.0
	TKN_N	B312151-11A	0107TKN_N1	01/07/94	01/10/94	1.0
	TOC	B312151-10A	1220TOC3B	12/20/93	12/20/93	1.0
	TSS	B312151-10A	1214TSS1	12/14/93	12/14/93	1.0
	T_P	B312151-11A	0107T_P1	01/07/94	01/10/94	1.0
06D						
	AS GF	B312151-10A	121530203	12/15/93	12/19/93	1.0
	HG AA	B312151-10A	1216HGAA3	12/16/93	• •	1.0
	PB_GF	B312151-10A	121530203	12/15/93	12/19/93	1.0

Sample ID : A1604-MS

FRAC	Tests	Blank Reference	Batch ID	Prep Z	Analysis Date	Dil. Factor
07в						
	418_1	B312151-10A	1220TPHIR1	12/20/93	12/27/93	1.0
07C	310_1	B312151-10A	1215310_12 1	2/15/93	12/15/93	1.0
	9066	B312151-10A	122790661	12/27/93	01/06/94	1.0
	CL_IC	B312151-10A	1216CL_IC1	12/18/93	12/18/93	10.0
	COD	B312151-10A	1228COD2	12/28/93	12/28/93	1.0
	CR_VI	B312151-10A	1211CR_VI2	12/11/93	12/11/93	1.0
	NO3NO2	B312151-10A	1214NO3NO2	12/14/93	12/14/93	10.0
	SIO2	B312151-10A	1229SIO21B	12/29/93	12/29/93	25.0
	SO4_IC	B312151-10A	1216SO4_IC	12/16/93	12/16/93	5.0
	TDS	B312151-10A	1214TDS1	12/14/93	12/14/93	1.0
	TKN_N	B312151-11A	0107 TKN_N 1	01/07/94	01/10/94	1.0
	TOC	B312151-10A	1220TOC3B	12/20/93	12/20/93	1.0
	TSS	B312151-10A	1214TSS1	12/14/93	12/14/93	1.0
	T_P	B312151-11A	0107T_P1	01/07/94	01/10/94	1.0
07D						
	AS GF	B312151-10A	121530203	12/15/93	12/19/93	1.0
	HG AA	B312151-10A	1216HGAA3	12/16/93		
	PB_GF	B312151-10A	121530203	12/15/93		

Sample ID : A1604-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
08B						
	418_1	B312151-10A	1220TPHIR1	12/20/93	12/27/93	1.0
08C	310_1	B312151-11A	1217310_11 1	2/17/93	12/17/93	1.0
	9066	B312151-10A	122790661	12/27/93	01/06/94	1.0
	CL_IC	B312151-10A	1216CL_IC1	12/18/93	12/18/93	10.0
	COD	B312151-10A	1228COD2	12/28/93	12/28/93	1.0
	CR_VI	B312151-10A	1211CR_VI2	12/11/93	12/11/93	1.0
	NO3NO2	B312151-10A	1214NO3NO2	12/14/93	12/14/93	10.0
	SIO2	B312151-10A	1229SIO21B	12/29/93	12/29/93	25.0
	SO4_IC	B312151-10A	1216SO4_IC	12/16/93	12/16/93	5.0
	TDS	B312151-10A	1214TDS1	12/14/93	12/14/93	10.0
	TKN_N	B312151-11A	0107TKN_N1	01/07/94	01/10/94	1.0
	TOC	B312151-10A	1220TOC3B	12/20/93	12/20/93	1.0
	TSS	B312151-10A	1214TSS1	12/14/93	12/14/93	1.0
	T_P	B312151-11A	0107T_P1	01/07/94	01/10/94	1.0
08D						
JOD	AS GF	B312151-10A	121530203	12/15/02	12/19/93	1.0
		B312151-10A B312151-10A	121530203 1216HGAA3	12/15/93		
	HG_AA	B312151-10A B312151-10A	1215HGAA3 121530203	12/16/93		1.0 1.0
	PB_GF	B312131-1UA	121530203	12/15/93	12/19/93	1.0

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
09B						
	418_1	B312151-10A	1220TPHIR1	12/20/93	12/27/93	1.0
09C	310_1	B312151-10A	1215310 12 1	2/15/93	12/15/93	1.0
	9066	B312151-10A	122790661	12/27/93		1.0
	CL_IC	B312151-10A	1216CL_IC1	12/16/93	12/16/93	1.0
	COD	B312151-10A	1228COD2	12/28/93	12/28/93	1.0
	CR_VI	B312151-10A	1211CR_VI2	12/11/93	12/11/93	1.0
	NO3NO2	B312151-10A	1214NO3NO2	12/14/93	12/14/93	1.0
	SIO2	B312151-10A	1229SIO21B	12/29/93	12/29/93	1.0
	SO4_IC	B312151-10A	1216SO4_IC	12/16/93	12/16/93	1.0
	TDS	B312151-10A	1214TDS1	12/14/93	12/14/93	1.0
	TKN_N	B312151-11A	0107TKN_N1	01/07/94	01/10/94	1.0
	TOC	B312151-10A	1220TOC3B	12/20/93	12/20/93	1.0
	TSS	B312151-10A	1214TSS1	12/14/93	12/14/93	1.0
	T_P	B312151-11A	0107T_P1	01/07/94	01/10/94	1.0
09D						
335	AS GF	B312151-10A	121530203	12/15/93	12/19/93	1.0
	HG AA	B312151-10A B312151-10A	121530203 1216HGAA3	12/15/93		1.0
	PB GF	B312151-10A B312151-10A	12151GAA3 121530203	12/15/93		1.0
	- 2_01	B312131-10R	121330203	12/15/93	14/19/93	1.0

Sample ID : LAB BLANK #1

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
10A	310_1	B312151-10A	1215310_12	12/15/93	12/15/93	1.0
	418_1	B312151-10A	1220TPHIR	1 12/20/93	12/27/93	1.0
	9066	B312151-10A	122790661	12/27/93	01/06/94	1.0
	AS_GF	B312151-10A	121530203	12/15/93	12/19/93	1.0
	CL_IC	B312151-10A	1216CL IC:	1 12/16/93	•	1.0
	COD	B312151-10A	1228COD2	12/28/93	•	1.0
	CR_VI	B312151-10A	1211CR VI			1.0
	HG_AA	B312151-10A	1216HGAA3	• •	• •	1.0
	NO3NO2	B312151-10A	1214N03N02	, ,		1.0
	PB_GF	B312151-10A	121530203			1.0
	SIO2	B312151-10A	122951021		•	1.0
	SO4_IC	B312151-10A	1216SO4 I	• •		1.0
	TDS	B312151-10A	1214TDS1	12/14/93		1.0
	TKN_N	B312151-10A	0105TKN N1	• •		1.0
	TOC	B312151-10A	1220TOC3B	12/20/93	•	1.0
	TSS	B312151-10A	1214TSS1	12/14/93		1.0
	T_P	B312151-10A	0105T_P1	01/05/94		1.0

Sample ID : LAB BLANK #2

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
	310_1 rkn_n r_p	B312151-11A B312151-11A B312151-11A	1217310_11 1 0107TKN_N1 0107T_P1		01/10/94	1.0 1.0 1.0

TINKER_5001

WORK ORDE	r # 63	<u> 31215</u>	1		
	R SAMPLES	11 -			
# OF SOIL	SAMPLES				
8240	. 11		S102		/
8270 IR	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	- .	TDS TKN_N TOC	- / / - / v	
CRIV HG	//	- -	TSS T_P	Ju V	/
PB SO4_IC					
310_1 9066 CL_IC					
COD NO3NO2	11				

2-6 +9

APPENDIX A

DEFINITIONS

ND(U)	-	Analyte was analyzed for, but not detected. The value given after the ND or "U" is the detection limit for that compound.
A	-	The compound denoted with an "A" indicates a suspected aldol condensation product.
В	-	Indicates the compound was also detected in the blank, but at levels less than 5X the detection limit. Values for this compound may be suspect.
J	-	Indicates the compound was detected in the sample, but at levels less than the detection limit, but above the MDL. Results should be requarded as estimated.
כ	-	Indicates that the compound was identified in an analysis at a secondary dilution factor.
N	•	Indicates presumptive evidence of a compound. This flag is used for tentatively identified compounds.

MS - Matrix Spike	UG/L - Micrograms/Liter
MSD - Matrix Spike Duplicate	UG/KG - Micrograms/Kilogram
RPD - Relative Percent Difference	MG/KG - Milligrams/Kilogram
	MG/L - Milligrams/Liter
DL - Detection limit	%REC - Percent Recovery

OC Acceptance Limits

Method 8240	Water	Soil	Method 8270	Water	Soil
Surrogate % Recover: BFB Dichloroethane Toluene-d8	86-115 76-114 88-110	74-121 70-120 31-117	Surrogate & Recoveries Nitrobenzene-d5 2-Fluorobiphenyl Terphenyl-d14 Phenol-d5 2-Fluorophenol 2,4,6-Tribromophenol	35 - 114 43 - 116 33 - 141 10 - 94 21 - 100 10 - 123	18 - 13 $24 - 11$
Matrix Spike Limits 1,1-Dichloroethene Trichloroethene Benzne Toluene Chlorobenzene	(%) 61-145 71-120 76-127 76-125 75-130		Matrix Spike Limits(%) Phenoi Chlorophenoi 1,4-Dichlorobenzene N-Nitroso-di-propylamine 1,2,4-Trichlorobenzene 4-Chloro-3-methylphenoi Acenaphthene 4-Nitrophenoi 2,4-Dinitrotoluene Pentachlorophenoi	14 - 99 19 - 107 18 - 101 32 - 108 24 - 109 31 - 111 33 - 110 1 - 141 35 - 106 1 - 147 42 - 119	17 - 10 30 - 11 21 - 11 34 - 10 30 - 11 d - 13

METALS CONTROL LIMITS

ICP: ± 20% for MS/MSD & Duplicate

GF: Control Charts for MS/MSD; ± 20% for Dup

ICV/CCV

GF ICV ± 20% GF CCV ± 20% ICP ICV/CCV ± 10% HG AA ± 20%

CONTROL LIMITS GRAPHITE FURNACE/MERCURY

ANALYTE	MATRIX	LIMITS	COMMENTS
Нд	water	21 - 170	Control Charts (B inst.)
Hg	soil	44 - 150	Control Charts (B)
As	water	59 - 150	D
As	soil	75 - 125	D
As	water	52 - 140	С
As	soil	35 - 142	С
Pb	water	48 - 153	D
Pb	soil	75 - 125	D
Pb	water	33 - 163	C
Pb	soil	75 - 125	С
Se	water	37 - 136	D
Se	soil	27 - 118	D
Se	water	20 - 147	С
Se	soil	2.6 - 139	С

PREPR	EP METHOD:			
	EP METHOD:			
ANALYS	IS METHOD: C	2-16		
	BATCH DATE.	12/14/93		
!NS	TRUMENT ID:	A		
SE	T (BATCH) #:	i i		
Work Orders/Fraction	s Associated With	Batch		
Lab Samble 10's	Batch QC ID's			
1 B312147-GC	LCS ID: 1269	3~1		
2 -20C	LCSD ID: (2169			
3 B312078-01E	MB ID: 12169			
4 B312151-02C	140 15	2151-076		
5 -03C	1/00 10 -	151-08C		
6 -040		=1-06C		
7 -05C		000		
8 -06C	Batch QC Results	}	MDL:	PQL: my
9 -090				
10	Sample ID	Result : Units	Analyst [Date/Time
11	Method Blk	ND molL		12/16/93 10:25
12	LCS % Rec			10.00
12	1 000 00 0	100 1% Rec		
	LCSD % Rec	100 % Rec 99.4 % Rec		
13	LCSD % Rec LCS/LCSD RPD:	100 % Rec 99.4 % Rec 0-60 % RPD		
13	LCSD % Rec LCS/LCSD RPD: MS % Rec	100 % Rec 99.4 % Rec 0.60 % RPD 98.5 % Rec		
13 14 15	LCSD % Rec LCS/LCSD RPD: MS % Rec	100 % Rec 99.4 % Rec 0.60 % RPD 98.5 % Rec 97.0 % Rec		
13 14 15	LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec	100 % Rec 99.4 % Rec 0.60 % RPD 98.5 % Rec 97.0 % Rec 1.53 % RPD		
13 15 16 17	LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	100 % Rec 99.4 % Rec 0.60 % RPD 98.5 % Rec 97.0 % Rec 1.53 % RPD		
13 : 4 15 16 17	LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	100 % Rec 99.4 % Rec 0.60 % RPD 98.5 % Rec 97.0 % Rec 1.53 % RPD		
13 14 15 16 17 18	LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	100 % Rec 99.4 % Rec 0.60 % RPD 98.5 % Rec 97.0 % Rec 1.53 % RPD		
13 14 15 16 17 18	LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	100 % Rec 99.4 % Rec 0.60 % RPD 98.5 % Rec 97.0 % Rec 1.53 % RPD		
13 15 16 17 18 19	LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	100 % Rec 99.4 % Rec 0.60 % RPD 98.5 % Rec 97.0 % Rec 1.53 % RPD		
13 15 16 17 18 19	LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	100 % Rec 99.4 % Rec 0.60 % RPD 98.5 % Rec 97.0 % Rec 1.53 % RPD		
13 15 16 17 18 19	LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	100 % Rec 99.4 % Rec 0.60 % RPD 98.5 % Rec 97.0 % Rec 1.53 % RPD		
13 15 16 17 18 19	LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	100 % Rec 99.4 % Rec 0.60 % RPD 98.5 % Rec 97.0 % Rec 1.53 % RPD		

QC BATCH ID FOR WET CHEM - Test Code. COL

QC BATCH ID FOR	WET CHEM - Test Code: <u>SOY-F</u> C
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	300.0
BATCH DATE:	12-16-93
INSTRUMENT ID:	A
SET (BATCH) #:	1

Work Orders/Fractions Associated With Batch

Lab	Sample ID's	Batch QC ID's		-			
2	B311261 -010 B311074-010	LCS ID: LCS	0 12/69	7-1			
3	020	MB ID: PB					
4	B3120 B312147_0	9C MS ID: 83/2		, -			
5	200	MSD ID: 13/2					
6	B312078-01E	REP ID: 83/2	151-060	£'			
7	B312137.06A				MDI.	DOI .	10
8_	B312151 -02C	Batch QC Resul	ts		MDL:	PQL:	
9	030	<u> </u>	· 	<u></u>	14 - 1 - 4	D-4- (7:	
10	046	Sample ID	Result	Units		Date/Time	
11	050	Method Blk	NO	mg/L	BBG	12-16-53	10:25
12	060	LCS % Rec	100	% Rec		1	
13	076	LCSD % Rec	102	% Rec			
14	086	LCS/LCSD RPD	2	% RPD			
15	09 C	MS % Rec	86	% Rec			
16	<u> </u>	MSD % Rec	79	% Rec			
17		MS/MSD RPD	8.5	% RPD			
18		REP RPD	0.5	% RPD	F		
19							
20							
	nments:						
							

11	AS_Austin	Volatiles	QA Sp	ike Lot Summa	ry L011:	
	te/Time:_!			Intrument	: GC/MS A1	
	erator: <u>n</u>			Test/Hatr	1x: 8240 / Wa	ter
		TX 502.2		Operator:	MBP	
	ype Sample MS MSD LCS	- C) 6) 7 8 3 s	lab file 10 > A 5 6 > A 5 7 > A 5 8 > A 7 8	J. J.	
•	Client Sample			Sample	Lab File ID	
01	Dime	<u> </u>	B31	2151-01		
02			1	-02 -03		=
84			 	-04 -05		二
26			1	-06 -09		
80			1	, = 09		—
99			 			二
III			1			
13						
P			}			\rightrightarrows
首			1			
16 7 8 9			 			二
I						士
- - X1	 					·
Con	ments:					
• •	Field us	ed only if n	ecessi	Prep Test (QC Batch ID . Code/Date:/_ Code/Date: <u>8240_/12/17</u> : IInst. ID:A	<u>.</u> 193
		•		231		

,

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY AND BLANK SPIKE RECOVERY

iab Mame: ITAS - Austin Date Ran: 12/17/93

QC BATCH ID

Sample Names:

Prep Code/Date:

Test Code/Date: 8240 | 12/17/93

CLIENT ID:

Matrix Spike - SAM Sample No. B312151/06 Matrix: WATER Set #:

Inst.ID: A1

(5.000 NL TO 5 NL)

1.0 X DIL

1	SPIKE	SAMPLE	MS	HS	QC	
COMPOUND	ADDED	CONC	CONC	1	LIMITS	
NAME	(ug/L)	(ug/L)	(ug/L)	REC #	REC.	-
	:== ======	: ======	**********		=======	=
1.1-Dichloroethene_	58.88	.00	49.81	100	61 - 149	,
Trichloroethene	58.88	99.48	141.88	85	71 - 126	
Benzene	50.00	.66	48.42	97	76 - 127	'
Toluene	50.00	.00	46.42	93	76 - 125	,
Chlorobenzene	56.88	.00	47.36	95	75 - 130	
	i	İİ				_

BLANK	BS	85	QC
CONC	CONC	1	LIMITS
(ug/L)	(ug/L)	REC #	REC.
======	= =======	=====	========
	58.25	101	61 - 145
•	46.02	92	71 - 120
	47.69	95	76 - 127
	46.01	92	76 - 125
•	46.33	93	75 - 130
	1	l	

		MSD	1	!	!
ADDED	CONC.	1	1	QC	LIMITS
(ug/L)	(vg/L)	REC #	RPD #	RPD	REC.
= ========	. ======			======	=======================================
50.00	50.19	100	1	14	61 - 145
58.88	141.79	85		14	71 - 120
50.00	48.99	98	1 1	11	76 - 127
58.88	46.76	94	1 1	13	76 - 125
50.00	47.64	95	1 1	13	75 - 130
	(ug/L) 	(ug/L) (ug/L) 50.00 50.19 50.00 141.79 50.00 48.99 50.00 46.76	(ug/L) (ug/L) REC	(ug/L) (ug/L) REC RPD REC (ug/L) (ug/L) REC RPD	
Column to be used to flag recovery and RPD values with an asterisk.

* Values outside of QC limits.

• out of 5 outside limits.

Spike Recovery: 0 out of 10 outside limits.

SURROGATE RECOVERIES

Toluene - d8	96	96	95	88 -	116
Bromofluorobenzene	98	96	97	86 -	115
1.2-Dichloroethane - d4	99	99	98	178 -	114
			_		

outside limits.

00:32 00:58 20:58

)A1517)A1518)ABS17 LIMITS > A BB17 ⇒ all reg

FORM III VOA-2

QC BATCH ID FOR	R GFAA/CVAA - Tes	t Code: AS_GF
PREPREP METHOD:		
PREP METHOD:	Z3020	
ANALYSIS METHOD:	7060	
BATCH DATE:	12/15/93	
INSTRUMENT ID:	D	
SET (BATCH) #:	3	

Work Orders/Fractions Associated With Batch

Lab Sample ID's

1 B312151-020 CHD <u>050</u> <u>080</u>

<u>09</u>D

Batch QC ID's

LCS ID: LCG 20 (21593.2
LCSD ID: 62.593 20 121593 -2
MB ID: 0320 121593-2
MS ID: 33,2151 - 670
MSD ID: 8312151 - 080
REP ID: 8312151-060

Batch QC Results

MDL: 0.010 PQL: 0.010

Sample ID	Result	Units	Analyst	Date/Time
Method Blk	20.010	MG/L	KMB	12/19/93 12:15
LCS % Rec	96.3	% Rec		
LCSD % Rec	91.5	% Rec		
LCS/LCSD RPD	5,11	% RPD		
MS % Rec	92.5	% Rec		
MSD % Rec	92.5	% Rec		
MS/MSD RPD	0.0	% RPD		
REP RPD	0.0	% RPD	1	1

Comments:	Analytical Spike = 117 %	

QC BATCH ID FOR	R GFAA/CVAA - Test Code: PR_GF
PREPREP METHOD:	
PREP METHOD:	73020
ANALYSIS METHOD:	7421
BATCH DATE:	12/15/93
INSTRUMENT ID:	C
SET (BATCH) #:	3

Work Orders/Fractions Associated With Batch

Lab S	Sample I	D's
1 3	312151	-020
_2		030
_3		040
4		050
5		C60
6		970
7		0 <u>80</u>
8	<u> </u>	<u> 90</u>
9		7_
10		
11	7	
12		
13	1/1/10	5
1.4	$\sim 1/\sqrt{2}$	

Batch QC ID's

LCS ID: LC 20 121593.2
LCSD ID: (2,5020 12,593 - 2
MB ID: 13 % 20 (21593-2
MS ID: 33,2151 - 670
MSD ID: 0302 151 - 080
REP ID: 1312 151- 060

Batch QC Results

Sample ID	Result	Units	Analyst	Date/Time
Method Blk	20.0030	MGIL	KMB	12/19/93/1:51
LCS % Rec	104	% Rec	}	
LCSD % Rec	105	% Rec		
LCS/LCSD RPD	0:457	% RPD		
MS % Rec	101	% Rec		
MSD % Rec	98.0	% Rec		
MS/MSD RPD	3.02	% RPD		
REP RPD	0.0	% RPD	V	1

MDL: 0.0030 PQL: 0.0030

Comments:	Analytical	Spike	=	112 %	
	<u> </u>				

Hg-HA 12/16/93 MhA

QC BATCH ID FOR	GFAA/CVAA - Test Code:
PREPREP METHOD:	1311
PREP METHOD:	
ANALYSIS METHOD:	7470
BATCH DATE:	12/16/43
INSTRUMENT ID:	<i>'</i> A'
SET (BATCH) #:	1(3)

Work Orders/Fractions Associated With Batch

Lab Sample ID's	Batch QC ID's		_		
1 B312151 - 027 2 03D 3 04D 4 05D 5 06D 6 075	LCS ID: JCV LCSD ID: CCV-1 MB ID: JCB MS ID: JS312 MSD ID: REP ID:		- - - -		
8 09)	Batch QC Resul	lts		MDL: 0	.020 PQL: 0.03
10	Sample ID	Result	Units	Analyst	Date/Time
11	Method Blk	O,O	my/L	M44	
12	LCS % Rec	96.5	% Rec	NIST	12/16/43 22:00
13	LCSD % Rec	102	% Rec	 	
14 MhA / 62	LCS/LCSD RPD		% RPD	† <i>†</i> †	
15 12/10/12	MS % Rec	111	% Rec	1 /	
16	MSD % Rec	112	% Rec	1	
17	MS/MSD RPD	0.90	% RPD		
18	REP RPD	0	% RPD	V	3/
19 / 20 /					
Comments:					

Tes	t	ode/Date:	8270	12-5-97
Set		_	nst. IDi	

Туре	Lab Sample ID Lab File ID (Y or N)
Blank Sample HS HSD ICS	B312151-7B 6m5 -8B 6m5D

This QA Spike Lot applies to the following Samples:

Client	Lab Sample ID	Lab File ID
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 10 10 10 10 10 10 10	B312151 · 2B	12-15 Set1

Comments:	

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY AND BLANK SPIKE RECOVERY

Lab Name: ITAS - Austin

CLIENT ID:

QC BATCH ID

Sample Names:

D#517 00518 Prep Code/Date:

3520 12/15/93

Date Ran:

12/23/93 12/23/93

Test Code/Date:

68 1

2 | 46 |

8 | 55 |

1 | 43 |

2 | 18 |

4 | 37

2 | 45

6 | 71

13 | 143

8270 | 12/15/93

Time Ran:

Set #: 1

Inst.ID:0

1 - 147 | |

32 - 108 |

24 - 109 |

31 - 111 |

33 - 110

1 - 141 |

35 - 106 |

1 - 147 |

42 - 119 |

Natrix Spike - SAN Sample No.

| PENTACHLOROPHENOL

1.48 2.16

B312151/06 Matrix: WATER

(1000 ML

TO 1 ML) 1.6 X OIL

COMPOUND NAME	SPIKE ADDED (ug/L)	SAMPLE COMC (ug/L)	NS CONC (ug/L)	MS % REC #	QC LIMITS REC.	BLANK CONC (ug/L)	BS CONC (ug/L)	BS * REC #	QC LIMITS REC.
PHENOL	100.00	.11	83.42 90.12	83 90	14 - 99 19 - 147	•	.11	t	14 - 99
1,4-DICHLOROBENZENE N-NITROSODI-N-PROPYLANINE	50.00 50.00	.00	35.45 41.66	71 83	18 - 101 32 - 108		.00 .00	1 1	
1,2,4-TRICHLOROBENZENE	50.00 100.00	.01	36.74 88.48	73 88	24 - 109 31 - 111		.01		24 - 109 31 - 111
ACEMAPHTHENE 4-MITROPHENOL 2.4-DIMITROTOLUENE	50.00 100.00 50.00	.01 .00 .00	43.19 73.17 34.27	86 73 69	33 - 110 1 - 141 35 - 106		10. 00. 10.		33 - 110 1 - 141 35 - 186

PYRENE	51.00	.11	45.06		98	42 - 119	1 .11
COMPOUND	SPIKE	NSD CONC.	MSD 1	;	QC	LIMITS	CLP LIMITS
NAME	[(ug/L)	(ug/L) 	REC #	RPD #	RPD	REC.	SPIKE
PHENOL 2-CHLOROPHENOL 1,4-DICHLOROBENZENE	100.00 100.00 50.00	86.37 93.06 39.05	86 93 78	3 3 10	41 45 46	14 - 99 19 - 107 18 - 101	12 - 110 27 - 123 36 - 97

85

8# I

92 |

88

78

69 |

78

92

	LINITS		
	SPIKE	RPD	
į		=====	
	12 - 110	42	
į	27 - 123	40	
-	36 - 97	28	
-	41 - 116	38	
-	39 - 98	28	
ĺ	23 - 97	42	
ĺ	46 - 118	31	
j	10 - 80	51	
i	24 - 96	38 j	
i	9 - 103	50	
i	26 - 127	51	
ì			

• 1

1 4 1 - 147 |

4 * | 42 - 119 |

. 44

. 11

ŧ	Co.	lumn	to	þe	used	to	flag	recovery	and	RPD	values	with	an	asterisk.
---	-----	------	----	----	------	----	------	----------	-----	-----	--------	------	----	-----------

1 100.00 |

.00 | 68.34

ACENAPHTHENE____

PENTACHLOROPHENOL____

14-WITROPHEMOL

|N-NITROSODI-N-PROPYLANINE_| 50.00 | 42.47 |

1,2,4-TRICHLOROBENZENE___| 50.00 | 39.96 |

| 4-CHLORD-3-METHYLPHENOL___| 100.00 | 92.37 |

|2,4-DINITROTOLUENE____| 50.00 | 34.44 |

RPD: 0 out of 11 outside limits.

1 108.00 | 77.99 |

1 100.00 | 78.08 |

50.00 | 45.92 |

44.00

Spike Recovery: 0 out of 22 outside limits.

50.00

Spike Recovery:	22	outside li		in 1951 94						
SURROGATE RECOVERIES			ON517	00518			D0902	41	LINII	r s
DS-NITROBENZENE			91	9	7	1 1	107	1	35 -	114
2-FLUOROBIPHENYL			73	70	6		14	İ	43 -	116
D14-P-TERPHENYL			84	8:	3 j		1/4	Ì	33 -	141
DS-PHENOL			80	71	6	1 1	1/8	1	10 -	94
2-FLUOROPHENOL			74	1 70	5	1 1	90	İ	21 -	100
2.4.6-TRIBRONOPHENOL			65	1 7:	3	1 • 1	131	*	10 -	123

FORM III SV-1

^{*} Values outside of QC limits.

WATER SENIVOLATILE BLANK SPIKE RECOVERY

Lab Name: ITAS - Austin CLIENT ID: QC BATCH ID

 Sample Names:
 DBP51
 DBK51
 Prep Code/Date:
 3520
 12/15/93

 Date Ran:
 12/22/93
 12/22/93
 Test Code/Date:
 8270
 12/15/93

Time Ran: 22.58 22.34 Set #:1 Inst.ID: 0

Matrix Spike - SAM Sample No. B312151/BS Matrix: WATER

(1000.00 ML TO 1.00 ML) 1.0 X DIL

COMPOUND	SPIKE	BLANK	BS CONC	85	QC LIMITS	CLP LINIT	
NAME	(ug/L)	(ug/L)	(ug/L)	REC #	REC.	SPIKE	RPD
PHENOL	100.00	. 44	86.48	86	14 - 99	12 - 110	42
2-CHLOROPHENOL	100.00	.11	91.48	91	19 - 107	27 - 123	40
1,4-DICHLOROBENZENE	54.44	.11	35.58	71	18 - 101	36 - 97	28
N-NITROSODI-N-PROPYLANIN	54.44	.00	41.32	83	32 - 108	41 - 116	38
1,2,4-TRICHLOROBENZENE	54.44	.00	34.51	69	24 - 169	39 - 98	28
4-CHLORO-3-NETHYLPHENOL_	100.00	. 41	86.13	86	31 - 111	23 - 97	42
ACENAPHTHENE	50.00	. 44	42.18	84	33 - 110	46 - 118	31
4-NITROPHENOL	144.44	.00	71.59	72	1 - 141	10 - 80	50
2,4-DINITROTOLUENE	54.44	.41	34.19	68	35 - 106	24 - 96	38
PENTACHLOROPHENOL	100.00	.41	66.14	66	1 - 147	9 - 103	50
PYRENE	50.00		44.57	89	42 - 119	26 - 127	51

[#] Column to be used to flag recovery and RPD values with an asterisk.

Spike Recovery: 0 out of 11 outside limits.

l 91	1 444	
	100	35 - 114
	81	43 - 116
84	85	33 - 141
86	98 *	10 - 94
76	79	21 - 100
75	78	10 - 123
	84 86 76	84 85 86 98 * 76 79

^{*} Values outside of QC limits.

PREPREP METHOD: NA PREP METHOD: 23005 ANALYSIS METHOD: 60/0 BATCH DATE: /2-/6-93 INSTRUMENT ID: B SET (BATCH) #: /

Work Orders/Fractions Associated With Batch

Lab Sample ID's

1) B312151-020 -050 -060 -090 7) 8) 9) 10) 11) 12) 13) 14) 15) 16) 17) 18) 19)

20)

Batch QC Samples

LCS ID: LC505 121693-1	
LCSD ID: LCSD05/2/693-/	
MB ID: PBN05121693-1	0 -
MS ID: B312151-070 ms	.F06D
MSD ID: B3/2/5/-080 MSD	L
REP ID:	

ANALYTES REQUIRED FOR BATCH:

Ag Al As B Ba Be Ca Cd Co Cr Cu Fe K Mg Mn Mo Na

QC Batch ID	
eprep Method:	
Prep Method:	3005
Analysis Method:	6010
Batch Date:	12/16/93
Instrument ID:	В
Batch (Set) #:	1

Matrix: WATER Units: MG/L	Data Repo	orted to PQL
OTINO. IVIO,E		Corr. Fact.
Method Blk ID:	PB05121693-1	1
LCS ID:	LCS05121693-1	1
LCSD ID:	LCSD05121693-1	1
MS Sample ID:	B312151-07D	1
MSD Sample ID:	B312151-08D	1
Rep Sample ID:		0

Page 1 of 2

	Replicate	Sample Da	ta		E	Blank / LC	S Batch QC							
	Original	<u> </u>		Н		Method		LCS	<u> </u>		LCSD	<u> </u>	Т	% RPD for
	Result for	Replicate				Blank	LCS true	Conc.	LCS		Conc.	LCSD		LCS/LCSD
Analyte	Replicate	Result	% RPD	Q		Result	Value (mg/L	Found	% Rec.	a	Found	% Rec.	la	Recoveries Q
Ag				Ħ	<	0.010	1	0.9617	96		0.97	97	 =	0.95
Al				H	<	0.20	10	10.2	102	Н	10.22	102	t	0.20
As			····	\Box	<	0.10	1	1.046	105	П	1.06	106		1.61
В				П	<	0.20	1	0.9738	97	П	0.99	99	T	1.77
Ba				П	~	0.20	1	0.9872	99		0.99	99	Г	0.14
Be				\Box	<	0.0050	1	0.9767	98	П	0.99	99	Τ	0.89
Ca				П	<	5.0	20	20.79	104		21.00	105	T	1.01
Cd				П	<	0.0050	1	0.9664	97		0.98	98	Γ	1.13
Co				П	<	0.050	1	0.9388	94		0.95	95	Г	1.25
Cr				П	<	0.010	1	0.9905	99		1.00	100		0.52
Cu				П	<	0.025	1	0.9395	94		0.94	94	П	0.37
Fe					<	0.10	10	10.62	106		10.51	105		1.04
K					<	5.0	20	19.47	97		20.03	100		2.84
Mg					<	5.0	20	20.23	101		20.32	102		0.44
Mn					<	0.015	1	0.9468	95		0.95	95		0.60
Мо					<	0.10	1	0.9549	95		0.97	97		1.20
Na					<	5.0	20	20.14	101		20.15	101		0.05
Ni					<	0.040	1	0.946	95		0.95	95		0.87
Рь					<	0.050	1	0.9492	95		0.96	96		0.90
Sb					<	0.060	1	1.015	101		1.00	100		1.39
Se					<	0.10	1	1.001	100		1.03	103		2.86
Si					<	1.0	10	11.26	113		11.12	111		1.25
Sn					<	0.10	1	0.9343	93		1.00	100		7.09
Ti					<	0.10	1	0.9903	99		0.99	99		0.33
П					<	0.20	1	1.055	106		1.03	103		2.20
V				Ц	<_	0.050	1	0.9608	96		0.97	97		0.76
Zn					<	0.020	1	0.9605	96		0.96	96		0.12

QC Data Reviewed By:	Q	_ Date/Time:	14/6:00	
Comments:	0		•	

.⊋ualifiers:

N - LCS % Recovery was outside method limits of 80-120 %.

R - % RPD for LCS/LCSD was outside control limit of 20 %.

^{*} Replicate RPD was outside method control limit of 20 %

QC Batch ID	
eprep Method:	
Prep Method:	3005
Analysis Method:	6010
Batch Date:	12/16/93
Instrument ID:	В
Batch (Set) #:	1

Batch QC Information		
Matrix: WATER	Data Rep	ported to PQL
Units: MG/L		
	_	Corr. Factor
Method Blk ID:	PB05121693-1	1
LCS ID:	LCS05121693-1	1
LCSD ID:	LCSD05121693-1	1
MS Sample ID:	B312151-07D	1
MSD Sample ID:	B312151-08D	1
Rep Sample ID:		

Page 2 of 2

	Spike Sam	ple Data											_
	Original				Τ				Т	% RPD for		% RPD for	Γ
	Result for	MS	MS Spike	MS		MSD	MSD Spike	MSD	ı	MS/MSD		MS/MSD Result	
Analyte	MS/MSD	Result	Added	% Rec.	Q	Result	Added	% Rec.	a	Recoveries	Q	As Replicates	0
Ag	ND	0.8002	1.00	80		0.7585	1.00	76	N	5.35			Γ
Al	0.9548	10.99	10.00	100		10.14	10.00	92	Π	8.84			Γ
As									Γ				Γ
В									Π				Γ
Ba	0.2409	1.104	1.00	86		1.046	1.00	81	Γ	6.95			Γ
Ве	ND	0.8165	1.00	82		0.7781	1.00	78	N	4.82			Γ
Ca	79.83	104.1	20.00	121	Z	98.89	20.00	95	Π	24.05	R		Γ
Cd	ND	0.7886	1.00	79	Z	0.761	1.00	76	N	3.56			Γ
Co													Γ
Cr	ND	0.8021	1.00	80		0.76	1.00	76	N	5.39			
Cu	ND	0.7963	1.00	80	П	0.7555	1.00	76	Z	5.26			
Fe	1.139	10.13	10.00	90	П	9.519	10.00	84	П	7.03			_
K	ND	19.21	20.00	96	П	18.49	20.00	92	П	3.82			_
Mg	52.03	74.33	20.00	111	П	70.7	20.00	93	П	17.72			_
Mn	0.0647	0.8518	1.00	79	7	0.8092	1.00	74	N	5. 56	٦		_
Мо					П				П		T		_
Na	42.66	62.51	20.00	99		59.41	20.00	84	П	16.94			_
Ni	ND	0.7694	1.00	77	N	0.7405	1.00	74	N	3.83	1		_
РЬ					П				П				_
Sb					П						7		_
	ND	0.7169	1.00	72	N	0.7211	1.00	72	N	0.58	1		_
Si					П				П		7		_
Sn									П		7		_
Ti									П		7		_
П					П				П		7		_
٧					\sqcap						\dashv		_
Zn	ND	0.7893	1.00	79	N	0.7496	1.00	75	N	5.16	7		_

Comments:	ncm	for	ALL	Nflags.	

Qualifiers (Q):

- H Sample concentration was greater than five times the spike level.
- N Spike recovery was outside method control limits of 80-120 %.
- R Percent RPD for MS/MSD recoveries was outside method control limit of 20 %.
- D Sample concentration was greater than five times the spike level.

 The RPD was calculated between the MS and MSD results as replicates.

QC Batch ID

Prep	Code/Date TAHTE / 12/2019
Test	Code/Date: 418.1
Set (Inst. ID:

Type	 Lab Sample ID	Result	Percent Recovery	QC fimits
Blank_ Blank spike_ HS_ HSD	B312151-BUK B5 07m) 08mD	₹.5. \$ 5.1 5.2	NI) 90 92	Reporting limit 70 to 130% 70 to 130% Ppg 70 to 130%

This QA Spike Lot applies to the following Samples:

	Client	Sam # + Fraction	Date of Prep
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	BSIZIST Tinker		Date of Prep
18 19 20			

Comments	

QC BATCH ID FO	OR WET CHEM - Test Code: 102 002
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	353.2
BATCH DATE:	12-14-93
INSTRUMENT ID:	Д
SET (BATCH) #:	2

Lab Sample ID's	Batch QC ID's		-			
1 1312151-026 2 -036 3 -046 4 -056 5 -066 6 -096	LCS ID: LCS ID: LCS ID: LCS ID: LCS ID: MB ID: MB ID: MB ID: MS ID: MSD ID: LCS ID: LC	2151-05 2151-05 208	<u>)</u> -	C' .		
8	Batch QC Resul	lts		MDL:	PQL: 💁 🤆	250
9	Sample ID	Result	Units		Date/Time]
10	Method Blk	< 0.050	~5/L	053	12/14/93/6:29	1
11 12	LCS % Rec	105	% Rec	1	1-144(1310-7	1
13	LCSD % Rec	101	% Rec			1
14	LCS/LCSD RPD		% RPD			
15	MS % Rec	96.0	% Rec			
16	MSD % Rec	93,6	% Rec			
17	MS/MSD RPD	2.53	% RPD		j	
18	REP RPD	3.88	% RPD			
19			<u> </u>	L		,
20						
Comments:						

QC BATCH ID FOR	R WET CHEM - Test Code: T_P
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	365.4 TKP
BATCH DATE:	1-5-94 *** Ibish
INSTRUMENT ID:	A
SET (BATCH) #:	2

Lab	Sample	ID's
1	B31215	4-2-
2	1	-034
3		- 045
4	:	-054
5	;	<u> - 165</u>
6		-090
7	· ·	-104
8	13312151	- 026
9	!	- 036
10	`	- 046
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

Batch QC	ID's	
LCS ID:	LC5010594-1	_
LCSD ID:	NA	•
MB ID:	PBW010594-1	-
MS ID:	B312154-076	ms of 08 c
MSD ID:	-076	msc 0+060
REP ID:	IEVIJEULU	F

Batch QC Results

Sample ID	Result	Units	Analyst	Date/Time
Method Blk	<0.10	WIL	Q53	1794 14:15
LCS % Rec	104	% Rec	1	
LCSD % Rec	M	% Rec		
LCS/LCSD RPD	M	% RPD		·
MS % Rec	100	% Rec		
MSD % Rec	98	% Rec		
MS/MSD RPD	2,0	% RPD		
REP RPD	3.7,	% RPD		V

MDL: ____ PQL: 0.10

Comments:			
		•	

QC BATCH ID FOR V	WET CHEM - Test Code: TP
PREPREP METHOD:	
PREP METHOD: —	
ANALYSIS METHOD: 3	65.4
BATCH DATE:	-7-94
INSTRUMENT ID:	A
SET (BATCH) #:	

Lab Sample ID's	Batch QC ID's					
1 1331215125C 2 - USC 11644 3 - USC 11644 5 6	LCS ID: LCSW 010794-1 LCSD ID: MB ID: PBW 010794-1 MS ID: B312151-070 marces MSD ID: \lambda -080 marces REP ID: NA					
8	Batch QC Resul	ts		MDL:	PQL: <u>0.10</u>	
9	Sample ID	Result	Units	Analyst	Date/Time	
10	Method Blk	<0.i0	MAIL	asb	1/10/44 10:40	
11	LCS % Rec	104	% Rec	1	11017110110	
12	LCSD % Rec	101	% Rec	 		
13	LCS/LCSD RPD		% RPD			
14	MS % Rec	99	% Rec			
15			% Rec			
16	MSD % Rec	96	% RPD			
	MS/MSD RPD	3.1	% RPD			
	REP RPD		/6 NFD			
19						
20						
Comments:						

QC BATCH ID FC	OR WET CHEM - Test Code: TKN
PREPREP METHOD:	****
PREP METHOD:	-
ANALYSIS METHOD:	351.2
BATCH DATE:	1-5-94
INSTRUMENT ID:	Α
SET (BATCH) #:	1

Lab Sample ID's	Batch QC ID's							
1 3312154-02C 2 03C 3 -04C 4 -05C 5 -06C 6 -09C	MBID: PBI MSID: 33 MSDID:	NO 1059	14-1 27-1 ms 28-12-18-18-18-18-18-18-18-18-18-18-18-18-18-	6F ()6)6			
7 -10C 8 3312143-01C	Batch QC Resul	ts		MD	L:		_ PC	QL:
8 3312143-01C 9 -02C								
10 B312151-02C	Sample ID	Result	Units	Ana	alyst	Di	ate/Tir	ne
11 -034	Method Blk	< 0.25	MSIL	DS	3	11	7/94	15:04
12 - 045	LCS % Rec	99	% Rec			$oxed{oxed}$		
13	LCSD % Rec		% Rec		!	_		
14	LCS/LCSD RPD		% RPD			_		
15	MS % Rec	93.8	% Rec	,		_		
16	MSD % Rec	94.6	% Rec					
17	MS/MSD RPD	0.85	% RPD			_		
18	REP RPD	0.92	% RPD			L	<u> </u>	
19								
20								
Comments:								
			•					

QC BATCH ID FOR W	ET CHEM - Test Code: Trn-N
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	351,2
BATCH DATE:	DI-07-94
INSTRUMENT ID:	A
SET (BATCH) #:	/

Lab Sample ID's	Batch QC ID's		-			
1 B312151-05C 2 06C	LCSD ID: LCS	LCS ID: ICV 010794-1 LCSD ID: LCS 010794-1				
3 09C		3 01079				
5 -020 1/10		12 151 - 07 12 15 1 - 08				
5 <u>-02</u> 11°	REP ID:	12/3/ -00	-			
7 β312276-038			-			
8 -055	Batch QC Resul	ts		MDL:	PQL: <u>0, 25</u>	
9 -3312327 010			Τ			
10 020	Sample ID	Result	Units	Analyst	Date/Time	
11 030	Method Blk	ND		05B	1/10/94 08:44	
12 040	LCS % Rec	85.0	% Rec	1	, ,	
13 05 H	LCSD % Rec	93. 2	% Rec		·	
14	LCS/LCSD RPD — % RPD		<u> </u>	·		
15	MS % Rec	92.4	% Rec	1 1		
16	MSD % Rec	93.8	% Rec			
17	MS/MSD RPD	1.5	% RPD			
18	REP RPD		% RPD			
19						
20						
Comments:						

QC BATCH ID FOR	WET CHEM - Test Code: 9066
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	9066
BATCH DATE:	12-27-93
INSTRUMENT ID:	A
SET (BATCH) #:	

_ab Sample ID's	Batch QC ID's		_			
1 B3/2/5/-02C 2 O3C 3 O4C 4 O5C 5 O6C 6 O9C	LCS ID: $LCS = \frac{122193}{122493}$ -/ LCSD ID: $LCS = \frac{122493}{122493}$ -/ MB ID: $MB = \frac{122493}{122493}$ -/ MS ID: $B312151 - 08C$ REP ID: $B312151 - 08C$					
8	Batch QC Resul	ts		MDL:	PQL: <u></u>	
9		Dogult	Units	Analyst	Date/Time	
10		Campions		Ron	1-6-94 17:02	
11	Method Blk	ND	% Rec	10011	1-6-14 11.02	
12	LCS % Rec	93	% Rec		 	
13	LCSD % Rec	100				
14	LCS/LCSD RPD 7. 2 % RPD					
15	MS % Rec	90	% Rec	 		
16	MSD % Rec	85	% Rec	 	-	
17	MS/MSD RPD	5,7	% RPD	-		
18	REP RPD / % RPD /					
19						
20						
Comments:						

QC BATCH ID FO	R WET CHEM - Test Code: ALK-T
PREPREP METHOD:	NA
PREP METHOD:	N.A
ANALYSIS METHOD:	ALK TO
BATCH DATE:	12-15-93
INSTRUMENT ID:	A
SET (BATCH) #:	

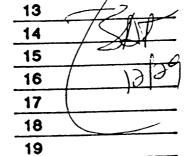
Lab Sample ID's	Batch QC ID's		_		
6 B312147-09C,20	MB ID: ///A MS ID: ///A	-43 - L	- - - 2151, B312	1154, 831 2	. 147 M
7 8	Batch QC Resu			MDL:	
9					10.4. /T-0
10	Sample ID	Result	Units		Date/Time
11	Method Blk	10		JAM	12-15-93
12	LCS % Rec	100	% Rec		
13	LCSD % Rec	100	1% Rec	!	
: 4	LCS/LCSD RPD	DI NA	% RPD		
15	MS % Rec		1% Rec	;	;
16	MSD % Rec		% Rec		
17	MS/MSD RPD		% RPD	i .	
18	REP RPD	1,24	% RPD	<u> </u>	:
19				•	
20					
Comments:					

QC BATCH ID FOR WET CHEM - Test Code: STOR
PREPREP METHOD:
PREP METHOD:
ANALYSIS METHOD: SIDA
BATCH DATE: 12/25/63
INSTRUMENT ID: A
SET (BATCH) #:) B

Lab Sample ID's 1 R31 2 3

2151-03C
- 540
-050
-66T

7	
8	
9	
10	
11	
12	



20

Batch	QC	ID's

LCS ID: LCS1229 53-1
MBID: MB 123963-/
MBID: MB 122993-/
MS ID: R312151-07C
MSD ID: 1312151-08C
REP ID: LCSD 122993-1

Batch	QC	Results

Sample ID	Result	Units	Analyst	Date/Time
Method Blk	D	hs/L	SA	12 29
LCS % Rec	90.0	% Rec		
LCSD % Rec	960	% Rec		
LCS/LCSD RPD	6.45	% RPD		
MS % Rec	92.8	% Rec		·
MSD % Rec	80,8			
MS/MSD RPD	13.8	% RPD		
REP RPD	6.45	% RPD		<u> </u>
L	<u> </u>		1	

MDL:_____ PQL: 0,20"5

Comments:	
Commence.	

GC	BATCH ID FOR	WET CHE	M - Test C	cae. TO	
PREPRE	P METHOD:				
	P METHOD:				
ANALYSI	S METHOD: +	か(
В	ATCH DATE. 12	30K3			
	RUMENT ID: A				
SET	(BATCH) #:	₽			
Work Orders/Fractions	s Associated W	ith Batch			
Lab Sample 10's	Batch QC ID'	s			
1 13312151-02C	LCS ID: LC	512209	3-3		
2 D3C	LCSD ID: La	0661 AZ	53-3		
3 - 640	MB ID: M	- 1000	<u>`3</u> -3		
4 -650	MS ID: 立会	-0707	(
<u>5</u> <u>-06</u> C		12151 - 08	<u>(C</u>		
6 -09 C	REP ID: 13	17121-016			
8	Batch QC Res	sults		MDL:	PQL: 1, D
				_	
9					
9	Sample ID	Result	Units	Anajyst	!Date/Time
	Sample ID Method Blk	Result	Units ms/L	Analyst	
10		IResult	· · · · · · · · / · · ·		!Date/Time
10	Method Blk	ID	i ms/L		
10 11 12	Method Blk	108	ms/L 1% Rec		
10 11 12 13	Method Blk ILCS % Rec LCSD % Rec LCS/LCSD RP	108	1% Rec		
10 11 12 13	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RP	108 108 108	1% Rec 1% Rec 1% RPD		
10 11 12 13 14 15	Method Blk ILCS % Rec ILCSD % Rec ILCS/LCSD RF IMS % Rec IMSD % Rec IMSD % RPD	108 108 108 114 107 63	% Rec % Rec % RPD % Rec % Rec % RPD		
10 11 12 13 15 16	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RF MS % Rec MSD % Rec	108 108 108 114 107 63	1% Rec 1% Rec % RPD % Rec 1% Rec		
10 11 12 13 15 16 17 18	Method Blk ILCS % Rec ILCSD % Rec ILCS/LCSD RF IMS % Rec IMSD % Rec IMSD % RPD	108 108 108 114 107 63	% Rec % Rec % RPD % Rec % Rec % RPD		
10 11 12 13 14 15 16 17 18	Method Blk ILCS % Rec ILCSD % Rec ILCS/LCSD RF IMS % Rec IMSD % Rec IMSD % RPD	108 108 108 114 107 63	% Rec % Rec % RPD % Rec % Rec % RPD		
10 11 12 13 14 15 16 17 18 19 20	Method Blk ILCS % Rec ILCSD % Rec ILCS/LCSD RF IMS % Rec IMSD % Rec IMSD % RPD	108 108 108 114 107 63	% Rec % Rec % RPD % Rec % Rec % RPD		
10 11 12 13 15 16 17 18	Method Blk ILCS % Rec ILCSD % Rec ILCS/LCSD RF IMS % Rec IMSD % Rec IMSD % RPD	108 108 108 114 107 63	% Rec % Rec % RPD % Rec % Rec % RPD		
10 11 12 13 14 15 16 17 18 19 20	Method Blk ILCS % Rec ILCSD % Rec ILCS/LCSD RF IMS % Rec IMSD % Rec IMSD % RPD	108 108 108 114 107 63	% Rec % Rec % RPD % Rec % Rec % RPD		
10 11 12 13 14 15 16 17 18 19 20	Method Blk ILCS % Rec ILCSD % Rec ILCS/LCSD RF IMS % Rec IMSD % Rec IMSD % RPD	108 108 108 114 107 63	% Rec % Rec % RPD % Rec % Rec % RPD		
10 11 12 13 14 15 16 17 18 19 20	Method Blk ILCS % Rec ILCSD % Rec ILCS/LCSD RF IMS % Rec IMSD % Rec IMSD % RPD	108 108 108 114 107 63	% Rec % Rec % RPD % Rec % Rec % RPD		

QC .	BATCH ID FOR WE! CHEM - Test C	لهر ۱۹۰۰	_	
PREPRE	EP METHOD:			
	EP METHOD:			
ANALYSI	S METHOD: TDS			
В	ATCH DATE. 1211493			
INST	RUMENT ID: A			
SET	(BATCH) #:)			
Work Orders/Fractions	s Associated With Batch			
Lab Sample IU's	Batch QC ID's			
1 B312154-40C	LCS ID: 1214 93-1			
<u>2</u> 03C	LCSD ID: 1 CSD 12148-1			
3 (24)C	MB ID: NA			
4 050	MS ID: NA			
5 00	MSD ID: NA			
6 09 C	REP ID: B312154 070,080			
	Batch QC Results	1401	/	n ng
9 09C	Daten GO Nesults	MDL:	PQL: /	0 7
10 Dyc	Sample ID Result Units	Analyst	!Date/Time	
11 050	Method Blk NA My/	TAM	15/14 9:30	
12 06	LCS % Rec /DO 1% Rec	-naut	1	2
13	LCSD % Rec / 0 / 1 % Rec			_
:4	LCS/LCSD RPD: 0947 % RPD			
15 / CAT	MS % Rec NA % Rec			 ;
16	MSD % Rec NA 1% Rec			
17 10 00	MS/MSD RPD NA 1% RPD	1,		-
18	REP RPD 354 515 75 11 18 RPD	$\overline{}$		_
19	199			
20				
Comments:				
Comments.				
Comments.				
Comments.				
Comments.				

QC BATCH ID FOR WET CHEM - Test Code: TDS
PREPREP METHOD:
PREP METHOD:
ANALYSIS METHOD: T DS
BATCH DATE: 12/14/9/30
INSTRUMENT ID: 人'
SET (BATCH) #:

Lab Sample ID's	Batch QC ID's		_		
1 R312154-02C 2 03C 3 04C 4 05C 5 0CD 6 02C	LCS ID: LCS ID: LCS ID: LCS ID: LCS ID: LCS ID: LCS ID: LCS ID: LCS ID: NA MS ID: NA MSD ID: NA REP ID: RS II.	D 12149.	 ,		
7(DOP 6F76) (USC	<u>B3/</u>	2151-08	2		1 Nord
8 696	区3/- Batch QC Resu	ilts		MDL:	PQL: 10 ms/L
9 1/56					5 1 5
10 R3/2/5/-09C	Sample ID	Result	Units	Analyst	
11 634	Method Blk	INA	1 mg/r	SATTORATH	12/145:30
12 040	LCS % Rec	100	% Rec		
13 056	LCSD % Rec	101	1% Rec		
068	LCS/LCSD RP	01 .955	% RPD		
15 N7C	MS % Rec	INA	i% Rec		
16 (DUPDF7C)08C	MSD % Rec	NA	% Rec		
17	MS/MSD RPD	INA	% RPD		
18	REP RPD	3.K/32	31% RPD	<u> </u>	V
19		,			
20					
Comments:					

QC BATCH ID FOR	R WET CHEM - Test Code: 60 5
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	C 0 1
BATCH DATES	जाव <u>कि8 ५</u> 3
INSTRUMENT ID:	D I
SET (BATCH) #:	à

Lab Sample ID's
1B312151-02C
3 040
4 050
5 660
6 D4C
7
8
9
10
11
12
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14
15
16 300
17
18
19
20

Batch QC ID's
LCS ID: LCS 122893-2
LCSD ID: LCSD 13-893-3
MB ID: MB 12853-2
MS ID: B312151-07C
MSDID: B312151-08C
REP ID: LCSD 120893-3

Batch QC Results

Sample ID	Result	Units	Analyst	Date/Time
Method Blk	0	W9/T	SAT	1998 16:00
LCS % Rec	106	% Rec	11'	1
LCSD % Rec	1049LH	% Rec		
LCS/LCSD RPD		% RPD		
MS % Rec	106	% Rec		·
MSD % Rec		% Rec		/
MS/MSD RPD	1.9	% RPD		/
REP RPD	9.49	% RPD	<u> </u>	
11-11-1	L	L.,		

MDL:___

Comments:	

	OC BATCH ID FOR WET CHEM - Test (Code. <u>T55</u>
PRF	PREP METHOD:	
	PREP METHOD:	
	YSIS METHOD: T SS	
ANAL	BATCH DATE. 12/14/53	
	NSTRUMENT ID: A	
	SET (BATCH) #:	
Work Orders/Fracti	ions Associated With Batch	
Lab Samble IU's	Batch QC ID's	
1 B312154-0X		
2 43	LCSD ID: Leso 121493-1	
3 040	MB ID: NON	
4 <u>05</u> (MS ID:	
5, 121	MSD ID:	1.
a bursful wic		C ¥
7 DUPOFUNSC	B313151-076,08	Ĺ
8 - MC	Batch QC Results	MDL:PQL:)
	Date: do nesalts	WIDE. POL: 10
9 100		
9 10C 10 R32)51-620	Sample ID Result Units	Analyst !Date/Time
9 10C 10 R323151-636 11 OSC	Sample ID Result Units Method Blk	
9 10C 10 7342151-626 11 05C 12 03C	Sample ID Result Units Method Blk DA nJ/L LCS % Rec 88.3 1% Rec	Analyst Date/Time
9 10C 10 R32151-62C 11 OSC 12 03C 13 D4C	Sample ID Result Units Method Blk NA n3/L LCS % Rec 88.3 % Rec LCSD % Rec 93.1 % Rec	Analyst Date/Time
9 10C 10 7342151-620 11 05C 12 03C 13 04C 14 05C	Sample ID Result Units Method Blk DA n3/L LCS % Rec 88.3 % Rec LCSD % Rec 93.1 % Rec LCS/LCSD RPD 5.39 % RPD	Analyst Date/Time
9 10C 10 R320151-60C 11 0SC 12 03C 13 04C 14 05C	Sample ID Result Units Method Blk NA n3/L LCS % Rec 88.3 % Rec LCSD % Rec 93.1 % Rec LCS/LCSD RPD 5.39 % RPD MS % Rec NA % Rec	Analyst Date/Time
9 10C 10 7323151-62C 11 05C 12 03C 13 04C 15 05C 15 05C	Sample ID Result Units Method Blk WA n3/L LCS % Rec 88.3 % Rec LCS/LCSD RPD 5.39 % RPD MS % Rec WA % Rec MSD % Rec 1% Rec 1% Rec	Analyst Date/Time
9 10C 10 7323151-62C 11 05C 12 03C 13 04C 15 05C 16 00 P of (1)-07C 17 DUPA-20 -08C	Sample ID Result Units Method Blk DA nJ/L LCS % Rec 88.3 % Rec LCS/LCSD RPD 5.31 % RPD MS % Rec DA % Rec MSD % Rec 1% Rec MSD % Rec 1% Rec MS/MSD RPD 1% RPD	Analyst Date/Time
9 10C 10 RYDISI - 60C 11 0SC 12 03C 13 04C 15 05C 15 06C 16 00 P O(L1) - 07C 17 DURY - 20 - 08C 18	Sample ID Result Units Method Blk NA n3/L LCS % Rec 88.3 % Rec LCSD % Rec 93.1 % Rec LCS/LCSD RPD 5.39 % RPD MS % Rec NA % Rec MSD % Rec 1% Rec MS/MSD RPD 1% RPD REP RPD 1% RPD	Analyst Date/Time
9 10C 10 R32151-20C 11 05C 12 03C 13 04C 15 05C 15 05C 16 DUP OLL 1-07C 17 DUP OLL 1-07C 18 19	Sample ID Result Units Method Blk DA nJ/L LCS % Rec 88.3 % Rec LCS/LCSD RPD 5.31 % RPD MS % Rec DA % Rec MSD % Rec 1% Rec MSD % Rec 1% Rec MS/MSD RPD 1% RPD	Analyst Date/Time
9 10C 10 RYDISI - 60C 11 0SC 12 03C 13 04C 15 05C 15 06C 16 00 P O(L1) - 07C 17 DURY - 20 - 08C 18	Sample ID Result Units Method Blk NA n3/L LCS % Rec 88.3 % Rec LCSD % Rec 93.1 % Rec LCS/LCSD RPD 5.39 % RPD MS % Rec NA % Rec MSD % Rec 1% Rec MS/MSD RPD 1% RPD REP RPD 1% RPD	Analyst Date/Time
9 10C 10 R32151-20C 11 05C 12 03C 13 04C 15 05C 15 05C 16 DUP OLL 1-07C 17 DUP OLL 1-07C 18 19	Sample ID Result Units Method Blk DA n3/L LCS % Rec 88.3 % Rec LCS/LCSD RPD 5.39 % RPD MS % Rec DA % Rec MSD % Rec 1% Rec MS/MSD RPD 1% RPD REP RPD 1%	Analyst Date/Time
9 10C 10 R32151-20C 11 05C 12 03C 13 04C 15 05C 16 DUP O(LP)-07C 17 DUPL-20 -08C 18 19 20 120	Sample ID Result Units Method Blk DA nJ/L LCS % Rec 88.3 % Rec LCSD % Rec 93.1 % Rec LCS/LCSD RPD 5.31 % RPD MS % Rec DA % Rec MSD % Rec 1% Rec MSD % Rec 1% Rec MS/MSD RPD 1% RPD REP RPD 1% RPD 10.0/4.88	Analyst Date/Time
9 10C 10 R32151-20C 11 05C 12 03C 13 04C 15 05C 16 DUP O(LP)-07C 17 DUPL-20 -08C 18 19 20 120	Sample ID Result Units Method Blk WA nJ/L LCS % Rec 88.3 % Rec LCSD % Rec 93.1 % Rec LCS/LCSD RPD 5.39 % RPD MS % Rec WA % Rec MSD % Rec 1% Rec MS/MSD RPD 1% RPD REP RPD 1% RPD 10.0/4.88	IAnalyst !Date/Time
9 10C 10 R32151-20C 11 05C 12 03C 13 04C 15 05C 16 DUP O(LP)-07C 17 DUPL-20 -08C 18 19 20 120	Sample ID Result Units Method Blk WA NJ/L LCS % Rec 88.3 % Rec LCSD % Rec 93.1 % Rec LCS/LCSD RPD 5.39 % RPD MS % Rec WA % Rec MSD % Rec 1% Rec MS/MSD RPD 1% RPD REP RPD 1% RPD 1% RPD 10.0/4.88	IAnalyst !Date/Time
9 10C 10 R32151-20C 11 05C 12 03C 13 04C 15 05C 16 DUP O(LP)-07C 17 DUPL-20 -08C 18 19 20 120	Sample ID Result Units Method Blk WA n3/L LCS % Rec 88.3 % Rec LCSD % Rec 93.1 % Rec LCS/LCSD RPD 5.39 % RPD MS % Rec WA % Rec MSD % Rec 1% Rec MSD % Rec 1% Rec MS/MSD RPD 1% RPD REP RPD 1% RPD 10.0/4.88	IAnalyst !Date/Time

		INSTRUMENT ID: SET (BATCH) #:	
			Lab Sample TU'S
DL: PQL: 100	12.6.10	MB ID: 17 MS ID: 6 MSD ID: 8 MSD ID: 8 C REP ID: 6 C Batch QC Re	1 B312147-GC 2 -200 3 B312078-015 4 B312151-020 5 -030 6 -040 7 -050 8 -060
nalyst !Date/Time	Result Units Analyst	Sample ID	9 -090
		Method Blk	:1
		LCS % Rec	12
		LCSD % Rec	13
	19.7		
·			
,			
		INFP HPI	16
	1.15 th por 12/27		19
	98.5 % Rec 98.5 % Rec 97.0 1% Rec RPD (.53 1% RPD	LCSD % Rec LCS/LCSD R MS % Rec MSD % Rec MS/MSD RPE REP RPD	13 14 15 16 17

QC BATCH ID FOR WET CHEM - Test Code. CLIC



ANALYTICAL SERVICES



CERTIFICATE OF ANALYSIS

IT CORPORATION
1250 CAPITAL OF TX HWY
BLDG. 3, SUITE 200
AUSTIN, TX 78746-6443
TIM JENNINGS

Date: 01/11/94

Work Order: B3-12-246

This is the Certificate of Analysis for the following samples:

Client Work ID: D.O.5001
Date Received: 12/18/93
Number of Samples: 8
Sample Type: WATER

409832-003-01

Introduction

Samples were labeled as follows:

LABORATORY #
B3-12-246-01
B3-12-246-02
B3-12-246-03
B3-12-246-04
B3-12-246-05
B3-12-246-06
B3-12-246-07
B3-12-246-08

Reviewed and Approved:

Jon Bartell

Daboratory Director

Page: 2 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-246

II. QA/QC

The results presented in this report meet the statement of work requirements in accordance with Quality Control and Quality Assurance protocol except as noted in Section IV or in an optional sample narrative at the end of Section III.

In the presented analytical data, 'ND' or '<' indicates that the compound is not detected at the specified limit.

III. Analytical Data

The following page(s) supply results for requested analyses performed on the samples listed above.

The test results relate to tested items only. ITAS-Austin reserves the right to control report production except in whole.

Page: 3 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-246

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1646
SAMPLE DATE: 12/02/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/29/93
DILUTION FACTOR: 1.0

UNITS: UG/L

·		Re	eporting				Re	eporting
	Result Qua	al	Limit		Result	Qua	1	Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U		Trichloroethene		5	U	5
Chloroethane	10	U	10	Chlorodibromomethane	1	. 6	J	5
Methylene chloride	1.6	JB		1,1,2-Trichloroethane		5	U	5
Acetone	100	U		Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U		2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U		Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	_	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	Ū	-	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	Ū	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	Ū	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	Ū	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	บ	5	Ethylbenzene		5	U	5
Vinyl acetate	10	Ū	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	98	88 - 110
BROMOFLUOROBENZENE	96	86 - 115
1,2-DICHLOROETHANE-D4	106	76 - 114

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 4 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

(512) 892-6684 409832-003-01 Work Order: B3-12-246

SAMPLE ID: A1647

SAMPLE DATE: 12/17/93 10:15:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference
Alkalinity, Titrimetric		260	10	MG/L	12/27/93	EPA310_1
TPH - IR		1.00	1.0	MG/L	12/28/93	EPA418_1
Phenolics		0.0100	0.010	MG/L	01/06/94	EPA9066
Chloride by Ion Chrom.		280	25	MG/L	01/10/94	EPA300_0
Chemical Oxygen Demand		25 U	25	MG/L	12/28/93	EPA410_4
Chromium VI		0.0100	0.010	MG/L	12/18/93	EPA7196
Nitrate and Nitrite		10	0.50	MG/L	01/05/94	EPA353_2
Silica		8.0	2.0	MG/L	12/29/93	370_1
Sulfate by Ion Chrom.		150	25	MG/L	01/10/94	EPA300_0
Total Dissolved Solids		1000	10	MG/L	12/22/93	EPA160_1
Total Kjeldahl Nitrogen		0.250	0.25	MG/L	01/10/94	EPA351_3
Total Organic Carbon		1.7	1.0	MG/L	12/29/93	EPA415_1
Total Suspended Solids		56	20	MG/L	12/22/93	EPA160_2
Total Phosphorus		0.100	0.10	MG/L	01/10/94	EPA365_3

Page: 5 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1647

SAMPLE DATE: 12/17/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/29/93
DILUTION FACTOR: 1.0

UNITS: UG/L

·		Re	eporting				Re	porting
	Result Qu	al	Limit		Result	Qual		Limit
Chloromethane	10	U	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene	!	50		5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	Ū	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone	!	50	U	50
cis-1,2-Dichloroethene	1.0	J	5	4-Methyl-2-pentanone	!	50	U	50
Chloroform	5	U	5	Tetrachloroethene	•	46		5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	Ū	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xvlenes, total		5	U	5

Surrogates	% Recovery	Limits				
TOLUENE-D8	99	88 - 110				
BROMOFLUOROBENZENE	95	86 - 115				
1,2-DICHLOROETHANE-D4	108	76 - 114				

Data Qualifier Key:

U - none detected

J - estimated value (less than the sample quantitation limit)

B - analyte is found in the associated blank as well as in the sample

'blank' - positive result

* - Surrogate recovery is outside QC limit

D - compound identified at a secondary dilution factor

E - concentration exceeds calibration range

Page: 6 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1647 SAMPLE DATE: 12/17/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 01/05/94
ANALYSIS DATE: 01/06/94
DILUTION FACTOR: 1.0

Reportin UNITS: UG/L Reporting Limit Result Qual Result Qual Limit 10 IJ 10 Phenol 10 U 10 2,6-Dinitrotoluene bis(2-Chloroethyl)ether 10 U 10 3-Nitroaniline 25 U 25 U 2-Chlorophenol 10 U 10 Acenaphthene 10 10 1,3-Dichlorobenzene 25 U 25 10 Ħ 10 2,4-Dinitrophenol U 25 1,4-Dichlorobenzene 10 U 10 4-Nitrophenol 25 10 U 10 Benzyl alcohol 10 17 10 Dibenzofuran 1,2-Dichlorobenzene 10 11 10 2,4-Dinitrotoluene 10 U 10 10 U 10 2-Methylphenol 10 U 10 Diethylphthalate 10 U 10 bis(2-Chloroisopropyl)ether 10 U 10 4-Chlorophenyl-phenylether U 10 10 4-Methylphenol 10 U 10 Fluorene 10 U 10 N-Nitroso-di-n-propylamine 10 Ħ 10 4-Nitroaniline 25 Hexachloroethane 10 U 10 4,6-Dinitro-2-methylphenol 25 U Nitrobenzene 10 10 U 10 10 TT N-Nitrosodiphenylamine (1) 10 10 U Isophorone 10 10 4-Bromophenyl-phenylether IJ 10 TT 10 2-Nitrophenol 10 TT 10 Hexachlorobenzene 25 U 25 2,4-Dimethylphenol 10 U 10 Pentachlorophenol Benzoic Acid 10 U 10 Phenanthrene 10 U 10 U 10 bis(2-Chloroethoxy)methane 10 Ħ 10 Anthracene 10 2,4-Dichlorophenol 10 U 10 10 U 10 Di-n-butylphthalate U 10 1,2,4-Trichlorobenzene 10 U 10 10 Fluoranthene 10 U 10 Naphthalene 10 U 10 Pvrene 10 4-Chloroaniline 10 10 Butylbenzylphthalate 10 U Hexachlorobutadiene 10 U 10 10 Ħ 10 3,3'-Dichlorobenzidine 4-Chloro-3-methylphenol 10 TT 10 Benzo(a) anthracene 10 U 10 2-Methylnaphthalene 10 U 10 10 U 10 Chrysene Hexachlorocyclopentadiene 1.1 J 10 10 U 10 bis(2-Ethylhexyl)phthalate 10 U 10 2,4,6-Trichlorophenol 10 U 10 Di-n-octylphthalate 2,4,5-Trichlorophenol 10 U 10 Benzo(b) fluoranthene 10 U 10 2-Chloronaphthalene 10 U 10 10 10 П Benzo(k)fluoranthene 2-Nitroaniline 25 U 25 10 U 10 Benzo(a)pyrene Dimethylphthalate 10 U 10 10 U 10 Indeno(1,2,3-cd)pyrene U Acenaphthylene 10 10 10 Ħ 10 Dibenzo(a,h)anthracene 10 10 Benzo(g,h,i)perylene

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: RPA8270

SAMPLE ID: A1647 SAMPLE DATE: 12/17/93 SAMPLE MATRIX: WATER

Surrogates ·	% Recovery	Limits
Nitrobenzene-D5	90	35 - 114
2-Fluorobiphenyl	83	43 - 116
Terphenyl-D14	105	33 - 141
Phenol-D5	34	10 - 94
2-Fluorophenol	53	21 - 100
2,4,6-Tribromophenol	86	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Referenced notes for these results:

Sample was originally extracted 12/22/93 and analyzed 12/31/93. The Blank Spike and the Matrix Spike Duplicate were outside acceptance limits. Sample was re-extracted 1/5/94 and reanalyzed 1/6/94. Results are reported from the reanalysis.

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1647

UNITS:

SAMPLE DATE: 12/17/93
SAMPLE MATRIX: WATER
PREP DATE: 12/28/93
ANALYSIS DATE: 12/29/93
DILUTION FACTOR: 1.00000

MG/L			Reporting
	Result	Qual	Limit
Aluminum	2.2		0.20
Barium	0.20	U	0.20
Cadmium	0.0050	U	0.0050
Calcium	95		5.0
Chromium	0.052		0.010
Copper	0.025	U	0.025
Iron	1.9		0.10
Magnesium	78		5.0
Manganese	0.040		0.015
Nickel	0.040	U	0.040
Potassium	5.0	U	5.0
Selenium	0.010	U	0.010
Silver	0.010	U	0.010
Sodium	160		5.0
Zinc	0.020	U	0.020

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-246

SAMPLE ID: A1648

SAMPLE DATE: 12/17/93 10:30:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference
Alkalinity, Titrimetric		390	10	MG/L	12/27/93	EPA310_1
TPH - IR		០.96ប	0.96	MG/L	12/28/93	EPA418_1
Phenolics		0.0100	0.010	MG/L	01/06/94	EPA9066
Chloride by Ion Chrom.		9.9	5.0	MG/L	01/10/94	EPA300_0
Chemical Oxygen Demand		2 5 U	25	MG/L	12/28/93	EPA410_4
Chromium VI		0.0100	0.010	MG/L	12/18/93	EPA7196
Nitrate and Nitrite		5.3	0.50	MG/L	01/05/94	EPA353_2
Silica		11	5.0	MG/L	12/29/93	370_1
Sulfate by Ion Chrom.		17	5.0	MG/L	01/10/94	EPA300_0
Total Dissolved Solids		450	10	MG/L	12/22/93	EPA160_1
Total Kjeldahl Nitrogen		0.250	0.25	MG/L	01/10/94	EPA351_3
Total Organic Carbon		1.00	1.0	MG/L	12/29/93	EPA415_1
Total Suspended Solids		45	10	MG/L	12/22/93	EPA160_2
Total Phosphorus		0.100	0.10	MG/L	01/10/94	EPA365_3

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1648
SAMPLE DATE: 12/17/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/29/93
DILUTION FACTOR: 1.0

UNITS: UG/L

		_					_	
		Re	eporting					porting
	Result Qua	1	Limit		Result	Qua]	L	Limit
Chloromethane	10	บ	10	1,2-Dichloropropane		5	U	5
Bromomethane	10	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride	10	U	10	Trichloroethene		. 5	J	5
Chloroethane	10	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	10	U	10	1,1,2-Trichloroethane		5	U	5
Acetone	100	U	100	Benzene		5	U	5
Carbon disulfide	5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene	5	U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane	5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene	5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene	5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform	5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane	5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	100	U	100	Toluene		5	U	5
1,1,1-Trichloroethane	5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride	5	U	5	Ethylbenzene		5	U	5
Vinyl acetate	10	U	10	Styrene		5	U	5
Dichlorobromomethane	5	U	5	Xylenes, total		5	U	5
				=				

Surrogates	% Recovery	Limits				
TOLUENE-D8	99	88 - 110				
BROMOFLUOROBENZENE	94	86 - 115				
1,2-DICHLOROETHANE-D4	105	76 - 114				

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 11 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001 409832-003-01 Work Order: B3-12-246

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1648
SAMPLE DATE: 12/17/93
SAMPLE MATRIX: WATER

EXTRACTION DATE: 01/05/94
ANALYSIS DATE: 01/06/94
DILUTION FACTOR: 1.0

UNITS: UG/L		R	eporting			1	Reportin
Res	ult	Qual	Limit		Result	Qual	Limit
Phone	-			0.6.01.11.004.1.000			10
Phenol	1	-	10	2,6-Dinitrotoluene	_	.0 U	10
bis(2-Chloroethyl)ether	1		10	3-Nitroaniline		.5 U	25
2-Chlorophenol	1		10	Acenaphthene		υ 0.	10
1,3-Dichlorobenzene	1		10	2,4-Dinitrophenol		!5 บ !5 บ	25 25
1,4-Dichlorobenzene	1		10	4-Nitrophenol	_	.5 U	25 10
Benzyl alcohol	1		10	Dibenzofuran	_	-	
1,2-Dichlorobenzene	1		10	2,4-Dinitrotoluene			10
2-Methylphenol	1		10	Diethylphthalate	_	-	10
bis(2-Chloroisopropyl)ether	1		10	4-Chlorophenyl-phenylether		.0 บ บ 0.	
4-Methylphenol N-Nitroso-di-n-propylamine	1		10	Fluorene		.0 U	10
Hexachloroethane	1	_	10	4-Nitroaniline	_	-	25
Nitrobenzene	1			4,6-Dinitro-2-methylphenol		.0 U	25 10
Isophorone	1			N-Nitrosodiphenylamine (1)	·	.0 ช.	10
2-Nitrophenol	1			4-Bromophenyl-phenylether		.ט ט	10
2,4-Dimethylphenol	1 1	-		Hexachlorobenzene	_	25 T	
Benzoic Acid	1	_		Pentachlorophenol Phenanthrene		.5 U	
bis(2-Chloroethoxy)methane	1		10 10		_	ט סו	
2,4-Dichlorophenol	1			Anthracene	-	.0 U	
1,2,4-Trichlorobenzene	1		10 10	Di-n-butylphthalate Fluoranthene	_	.0 U	10
Naphthalene	1		10		_	.0 ט	10
4-Chloroaniline	1	-	10	Pyrene	_	.0 ป.	10
Hexachlorobutadiene	1		10	Butylbenzylphthalate	_	.0 U	10
4-Chloro-3-methylphenol	1	_	10	3,3'-Dichlorobenzidine	_	.0 U	
2-Methylnaphthalene	1		10	Benzo(a)anthracene		.O U	10
Hexachlorocyclopentadiene	1		10	Chrysene	-	-	10
2,4,6-Trichlorophenol	1	_	10	bis(2-Ethylhexyl)phthalate		.0 U	10
2,4,5-Trichlorophenol	1	-	10	Di-n-octylphthalate	_	.0 U	10
2-Chloronaphthalene	1	_		Benzo(b)fluoranthene	-	.0 U	10
2-Nitroaniline	2	_	10	Benzo(k)fluoranthene	_	.0 ט	10
Dimethylphthalate	1	-	25 10	Benzo(a)pyrene	_	.0 U	
Acenaphthylene	1		10	Indeno(1,2,3-cd)pyrene		.0 บ	10
ncenaphony tene	1	0 U	10	Dibenzo(a,h)anthracene	_	.0 U	10
				Benzo(g,h,i)perylene	1	.0 0	10

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1648
SAMPLE DATE: 12/17/93
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits		
Nitrobenzene-D5	69	35 - 114		
2-Fluorobiphenyl	66	43 - 116		
Terphenyl-D14	78	33 - 141		
Phenol-D5	26	10 - 94		
2-Fluorophenol	44	21 - 100		
2,4,6-Tribromophenol	66	10 - 123		

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

U - none detected

J - estimated value (less than the sample quantitation limit)

B - analyte is found in the associated blank as well as in the sample

'blank' - positive result

* - Surrogate recovery is outside QC limit

D - compound identified at a secondary dilution factor

E - concentration exceeds calibration range

Referenced notes for these results:

Sample was originally extracted 12/22/93 and analyzed 12/31/93. The Blank Spike and the Matrix Spike Duplicate were outside acceptance limits. Sample was re-extracted 1/5/94 and reanalyzed 1/6/94. Results are reported from the reanalysis.

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1648

SAMPLE DATE: 12/17/93
SAMPLE MATRIX: WATER
PREP DATE: 12/28/93
ANALYSIS DATE: 12/29/93
DILUTION FACTOR: 1.00000

UNITS: MG/L

MG/L			Reporting	
	Result	Qual	Limit	
Aluminum	1.5		0.20	
Barium	0.56		0.20	
Cadmium	0.0050	U	0.0050	
Calcium	68		5.0	
Chromium	0.021		0.010	
Copper	0.025	U	0.025	
Iron	1.1		0.10	
Magnesium	42		5.0	
Manganese	0.016		0.015	
Nickel	0.040	U	0.040	
Potassium	5.0	U	5.0	
Selenium	0.010	U	0.010	
Silver	0.010	Ū	0.010	
Sodium	45		5.0	
Zinc	0.020	U	0.020	

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

Page: 14 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

SAMPLE ID: A1648-MS

SAMPLE DATE: 12/17/93 10:30:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
Alkalinity, Titrimetric	1	390		MG/L	12/27/93	EPA310_1
TPH - IR		87		% REC	12/28/93	EPA418_1
Phenolics		95		% REC	01/06/94	EPA9066
Chloride by Ion Chrom.		93		% REC	01/10/94	EPA300_0
Chemical Oxygen Demand		101		% REC	12/28/93	EPA410_4
Chromium VI		102		% REC	12/18/93	EPA7196
Nitrate and Nitrite		90		% REC	01/05/94	EPA353_2
Silica		126	5.0	% REC	12/29/93	370_1
Sulfate by Ion Chrom.		84		% REC	01/10/94	EPA300_0
Total Dissolved Solids	2	440	10	MG/L	12/22/93	EPA160_1
Total Kjeldahl Nitrogen		100		% REC	01/10/94	EPA351_3
Total Organic Carbon		102		% REC	12/29/93	EPA415_1
Total Suspended Solids	3	47	10	MG/L	12/22/93	EPA160_2
Total Phosphorus		105		% REC	01/10/94	EPA365_3

Referenced notes for these results:

- 1 Duplicate analysis performed in lieu of a matrix spike.
- 2 Duplicate analysis performed in lieu of a matrix spike.
- 3 Duplicate analysis performed in lieu of a matrix spike.

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1648-MS
SAMPLE DATE: 12/17/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/29/93
DILUTION FACTOR: 1.0

UNITS: % REC

	Result				Result
1,1-Dichloroethene	8	38	Trichloroet	hene	88
			Benzene		91
			Toluene		100
			Chlorobenze	ene	100
	Surrogates	\$	Recovery	Limits	
	TOI HENE-DO		100	99 - 110	

Surrogaces	* vecovery	TIMITES		
TOLUENE-D8	100	88 - 110		
BROMOFLUOROBENZENE	97	86 - 115		
1,2-DICHLOROETHANE-D4	104	76 - 114		

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 16 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: KPA8270

SAMPLE ID: A1648-MS
SAMPLE DATE: 12/17/93
SAMPLE MATRIX: WATER

EXTRACTION DATE: 01/05/94
ANALYSIS DATE: 01/06/94
DILUTION FACTOR: 2.2

UNITS: % REC

R	Result		
Phenol	38	Acenaphthene	102
2-Chlorophenol	92	4-Nitrophenol	36
1,4-Dichlorobenzene	85	2,4-Dinitrotoluene	94
N-Nitroso-di-n-propylamine	103	Pentachlorophenol	90
1,2,4-Trichlorobenzene	80	Pyrene	123
4-Chloro-3-methylphenol	94	-	

Surrogates	<pre>% Recovery</pre>	Limits
Nitrobenzene-D5	97	35 - 114
2-Fluorobiphenyl	82	43 - 116
Terphenyl-D14	113	33 - 141
Phenol-D5	40	10 - 94
2-Fluorophenol	58	21 - 100
2,4,6-Tribromophenol	90	10 - 123

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Referenced notes for these results:

Sample was originally extracted 12/22/93 and analyzed 12/31/93. The Blank Spike and the Matrix Spike Duplicate were outside acceptance limits. Sample was re-extracted 1/5/94 and reanalyzed 1/6/94. Results are reported from the reanalysis.

Page: 17 of 35

Company: IT CORPORATION

Date: 01/11/94

UNITS:

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1648-MS
SAMPLE DATE: 12/17/93
SAMPLE MATRIX: WATER
PREP DATE: 12/28/93
ANALYSIS DATE: 12/29/93
DILUTION FACTOR: 1.00000

% REC	Result
Aluminum	101
Barium	97
Cadmium	97
Calcium	109
Chromium	97
Copper	96
Iron	99
Magnesium	104
Manganese	94
Nickel	94
Potassium	111
Selenium	99
Silver	95
Sodium	65
Zinc	96

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

Referenced notes for these results:

Matrix spike outside control limits due to matrix interference on sodium and calcium analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX

(512) 892-6684

409832-003-01 Work Order: B3-12-246

SAMPLE ID: A1648-MSD

SAMPLE DATE: 12/17/93 10:30:00

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	_	Units	Analyzed	Reference
Alkalinity, Titrimetric		390	10	MG/L	12/27/93	EPA310_1
TPH - IR		88		% REC	12/28/93	EPA418_1
Phenolics		87		% REC	01/06/94	EPA9066
Chloride by Ion Chrom.		89		% REC	01/10/94	EPA300_0
Chemical Oxygen Demand		104		% REC	12/28/93	EPA410_4
Chromium VI		98		% REC	12/18/93	EPA7196
Nitrate and Nitrite		91		% REC	01/05/94	EPA353 2
Silica		126	5.0	% REC	12/29/93	370 1
Sulfate by Ion Chrom.		81		% REC	01/10/94	EPA300 0
Total Dissolved Solids	2	440	10	MG/L	12/22/93	EPA160 1
Total Kjeldahl Nitrogen		102		% REC	01/10/94	EPA351 3
Total Organic Carbon		99		% REC	12/29/93	EPA415 1
Total Suspended Solids	3	48	10	MG/L	12/22/93	EPA160 2
Total Phosphorus	_	104		% REC	01/10/94	EPA365_3

Referenced notes for these results:

- 1 Duplicate analysis performed in lieu of a matrix spike.
- 2 Duplicate analysis performed in lieu of a matrix spike.
- 3 Duplicate analysis performed in lieu of a matrix spike.

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

88 - 110

86 - 115

76 - 114

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: A1648-MSD
SAMPLE DATE: 12/17/93
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/29/93
DILUTION FACTOR: 1.0

UNITS: % REC

	Result		Result
1,1-Dichloroethene	84	Trichloroethene	84
		Benzene	88
		Toluene	96
		Chlorobenzene	97
	Surrogates	% Recovery Limits	

Data Qualifier Key:

U - none detected

TOLUENE-D8

BROMOFLUOROBENZENE

1,2-DICHLOROETHANE-D4

- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample

98

93

107

- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Page: 20 of 35

Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

Pegul+

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: A1648-MSD SAMPLE DATE: 12/17/93 SAMPLE MATRIX: WATER

EXTRACTION DATE: 01/05/94
ANALYSIS DATE: 01/06/94
DILUTION FACTOR: 2.2

UNITS: % REC

Res	REBUIL		
Phenol	39	Acenaphthene	102
2-Chlorophenol	90	4-Nitrophenol	37
1,4-Dichlorobenzene	91	2,4-Dinitrotoluene	94
N-Nitroso-di-n-propylamine	101	Pentachlorophenol	92
1,2,4-Trichlorobenzene	84	Pyrene	124
4-Chloro-3-methylphenol	97		

<pre>% Recovery</pre>	Limits
97	35 - 114
84	43 - 116
114	33 - 141
40	10 - 94
61	21 - 100
92	10 - 123
	97 84 114 40 61

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- $\mbox{\ensuremath{B}}\mbox{\ensuremath{-}}$ analyte is found in the associated blank as well as in the sample 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Referenced notes for these results:

Sample was originally extracted 12/22/93 and analyzed 12/31/93. The Blank Spike and the Matrix Spike Duplicate were outside acceptance limits. Sample was re-extracted 1/5/94 and reanalyzed 1/6/94. Results are reported from the reanalysis.

Page: 21 of 35

Company: IT CORPORATION

Date: 01/11/94

UNITS:

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: A1648-MSD **SAMPLE DATE: 12/17/93** SAMPLE MATRIX: WATER PREP DATE: 12/28/93 ANALYSIS DATE: 12/29/93 DILUTION FACTOR: 1.00000

% REC	Result
Aluminum	101
Barium	100
Cadmium	98
Calcium	130
Chromium	97
Copper	96
Iron	100
Magnesium	117
Manganese	94
Nickel	95
Potassium	113
Selenium	99
Silver	95
Sodium	77
Zinc	96

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA < 0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

Referenced notes for these results:

Matrix spike duplicate outside control limits due to matrix interference on sodium and calcium analysis by ICPES. LCS / LCSD results and method Quality Control were acceptable.

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 Work Order: B3-12-246 409832-003-01

SAMPLE ID: A1649

SAMPLE DATE: 12/17/93 12:00:00

SAMPLE MATRIX: SOIL

	Note		Reporting		Date Method	
Test Name	Ref	Result	Limit	Units	Analyzed Reference	
9071/418.1 for TPH		1700	250	MG/KG	12/30/93 EPA9071	

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: BTEX - Purge and Trap

METHOD REFERENCE: EPA8020

SAMPLE ID: A1649

SAMPLE DATE: 12/17/93
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/23/93
DILUTION FACTOR: 50

UNITS: UG/KG		Result	Reporting Limit
		Kebuit	
	Benzene	ND	50
	Ethylbenzene	ND	50
	Toluene	ND	50
	Xylenes (total)	ND	50

Total BTEX concentration: Not Detected

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-246

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: WATER

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	<u>Analyzed</u>	Reference
Alkalinity, Titrimetric		100	10	MG/L	12/27/93	EPA310_1
TPH - IR		1.00	1.0	MG/L	12/28/93	EPA418_1
Phenolics		0.0100	0.010	MG/L	01/06/94	EPA9066
Chloride by Ion Chrom.		1.00	1.0	MG/L	01/10/94	EPA300_0
Chemical Oxygen Demand		25 U	25	MG/L	12/28/93	EPA410_4
Chromium VI		0.0100	0.010	MG/L	12/18/93	EPA7196
Nitrate and Nitrite		0.0500	0.050	MG/L	01/05/94	EPA353_2
Silica		0.20U	0.20	MG/L	12/29/93	370_1
Sulfate by Ion Chrom.		1.00	1.0	MG/L	01/10/94	EPA300_0
Total Dissolved Solids		100	10	MG/L	12/22/93	EPA160_1
Total Kjeldahl Nitrogen		0.250	0.25	MG/L	01/10/94	EPA351_3
Total Organic Carbon		1.00	1.0	MG/L	12/29/93	EPA415_1
Total Suspended Solids		100	10	MG/L	12/22/93	EPA160_2
Total Phosphorus		0.100	0.10	MG/L	01/10/94	EPA365_3

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: Hazardous Substance Vols.

METHOD REFERENCE: EPA8240

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER
ANALYSIS DATE: 12/29/93
DILUTION FACTOR: 1.0

UNITS: UG/L

ORIIS. OG/L			_					Do.	porting
				porting		D1+			Limit
	Result	Qual	1	Limit		Result	Quar	•	TIMIT
Chloromethane	1	LO '	U .	10	1,2-Dichloropropane		5	U	5
Bromomethane	1	LO	U	10	trans-1,3-Dichloropropene		5	U	5
Vinyl chloride		LO	U	10	Trichloroethene		5	U	5
Chloroethane		LO	U	10	Chlorodibromomethane		5	U	5
Methylene chloride	1.	. 0	J	10	1,1,2-Trichloroethane		5	U	5
Acetone	10	00	U	100	Benzene		5	U	5
Carbon disulfide		5	U	5	cis-1,3-Dichloropropene		5	U	5
1,1-Dichloroethene		5	U	5	2-Chloroethylvinyl ether		10	U	10
1,1-Dichloroethane		5	U	5	Bromoform		5	U	5
trans-1,2-Dichloroethene		5	U	5	2-Hexanone		50	U	50
cis-1,2-Dichloroethene		5	U	5	4-Methyl-2-pentanone		50	U	50
Chloroform		5	U	5	Tetrachloroethene		5	U	5
1,2-Dichloroethane		5	U	5	1,1,2,2-Tetrachloroethane		5	U	5
2-Butanone	10	00	U	100	Toluene		5	U	5
1,1,1-Trichloroethane		5	U	5	Chlorobenzene		5	U	5
Carbon tetrachloride		5	U	5	Ethylbenzene		5	U	5
Vinyl acetate		10	U	10	Styrene		5	U	5
Dichlorobromomethane		5	U	5	Xylenes, total		5	U	5

Surrogates	% Recovery	Limits
TOLUENE-D8	101	88 - 110
BROMOFLUOROBENZENE	99	86 - 115
1,2-DICHLOROETHANE-D4	100	76 - 114

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

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Company: IT CORPORATION

Date: 01/11/94

2,4,5-Trichlorophenol

2-Chloronaphthalene

Dimethylphthalate

2-Nitroaniline

Acenaphthylene

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1 SAMPLE DATE: not spec SAMPLE MATRIX: WATER EXTRACTION DATE: 01/05/94

ANALYSIS DATE: 01/06/94

	01/06/94						
DILUTION FACTOR:	1.0					T	eporti
UNITS: UG/L	Dag. 14		eporting		Result	Qual	Limit
	Result	Quar	Limit		VERGIC	Quul	2220
Phenol	1	υ 0	10	2,6-Dinitrotoluene	10	_	10
bis(2-Chloroethyl)ether	1	U 0	10	3-Nitroaniline	25	5 U	25
2-Chlorophenol	1	υ 0	10	Acenaphthene	10	ט כ	10
1,3-Dichlorobenzene	1	υ 0	10	2,4-Dinitrophenol	2	ט 5	25
1,4-Dichlorobenzene	1	υ 0	10	4-Nitrophenol	2	5 U	25
Benzyl alcohol	1	0 U	10	Dibenzofuran	10	ט ס	10
1,2-Dichlorobenzene	1	0 U	10	2,4-Dinitrotoluene	10	υ 0	10
2-Methylphenol	1	υ 0	10	Diethylphthalate	10	0 0	10
bis(2-Chloroisopropyl)ethe	er 1	0 U	10	4-Chlorophenyl-phenylether	: 10	0 0	10
4-Methylphenol	1	0 U	10	Fluorene	10	o o	10
N-Nitroso-di-n-propylamine	e 1	0 U	10	4-Nitroaniline	10	υ 0	10
Hexachloroethane	1	0 U	10	4,6-Dinitro-2-methylphenol	L 2!	5 U	25
Nitrobenzene	1	0 U	10	N-Nitrosodiphenylamine (1)	10	0 U	10
Isophorone	1	0 U	10	4-Bromophenyl-phenylether	10	0 U	10
2-Nitrophenol	1	0 U	10	Hexachlorobenzene	10	υ 0	10
2,4-Dimethylphenol	1	0 υ	10	Pentachlorophenol	2	5 ซ	25
Benzoic Acid	1	0 U	10	Phenanthrene	10	υ 0	10
bis(2-Chloroethoxy)methan	e 1	ο υ	10	Anthracene	10	υ 0	10
2,4-Dichlorophenol	1	υ 0	10	Di-n-butylphthalate	10	0 υ	10
1,2,4-Trichlorobenzene	1	0 U	10	Fluoranthene	1	υ 0	10
Naphthalene	1	0 υ	10	Pyrene	1	υ 0	10
4-Chloroaniline	1	ο υ	10	Butylbenzylphthalate	1	υ 0	10
Hexachlorobutadiene	1	0 υ	10	3,3'-Dichlorobenzidine	1	o u	10
4-Chloro-3-methylphenol	1	o u	10	Benzo(a)anthracene	1	υ 0	10
2-Methylnaphthalene	1	υ 0	10	Chrysene	1	0 υ	10
Hexachlorocyclopentadiene	1	ט ס	10	bis(2-Ethylhexyl)phthalate	e 1	υ 0	10
2,4,6-Trichlorophenol	1	0 U	10	Di-n-octylphthalate	1	o u	10

10

10

25

10

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U

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10

25

10

10

Benzo(b)fluoranthene

Benzo(k)fluoranthene

Indeno(1,2,3-cd)pyrene

Dibenzo(a,h)anthracene

Benzo(g,h,i)perylene

Benzo(a)pyrene

U

U

U

U

U

U

10

10

10

10

10

10

10

10

10

10

10

10

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: ABN HSL GC/MS Extractables

METHOD REFERENCE: EPA8270

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: WATER

Surrogates	% Recovery	Limits					
Nitrobenzene-D5	80	35 - 114					
2-Fluorobiphenyl	75	43 - 116					
Terphenyl-D14	103	33 - 141					
Phenol-D5	32	10 - 94					
2-Fluorophenol	58	21 - 100					
2,4,6-Tribromophenol	82	10 - 123					

(1) N-Nitrosodiphenylamine cannot be separated from diphenylamine.

Data Qualifier Key:

- U none detected
- J estimated value (less than the sample quantitation limit)
- B analyte is found in the associated blank as well as in the sample
- 'blank' positive result
 - * Surrogate recovery is outside QC limit
 - D compound identified at a secondary dilution factor
 - E concentration exceeds calibration range

Referenced notes for these results:

Sample was originally extracted 12/22/93 and analyzed 12/31/93. The Blank Spike and the Matrix Spike Duplicate were outside acceptance limits. Sample was re-extracted 1/5/94 and reanalyzed 1/6/94. Results are reported from the reanalysis.

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Company: IT CORPORATION

Date: 01/11/94

UNITS:

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: Metals

METHOD REFERENCE: EPA6010

SAMPLE ID: LAB BLANK #1

SAMPLE DATE: not spec

SAMPLE MATRIX: WATER

PREP DATE: 12/28/93

ANALYSIS DATE: 12/29/93

DILUTION FACTOR: 1.0

MG/L			Reporting
	Result	Qual	Limit
Aluminum	0.20	υ	0.20
Barium	0.20	U	0.20
Cadmium	0.0050	U	0.0050
Calcium	5.0	U	5.0
Chromium	0.010	U	0.010
Copper	0.0250	U	0.0250
Iron	0.10	U	0.10
Magnesium	5.0	U	5.0
Manganese	0.0150	U	0.0150
Nickel	0.040	บั	0.040
Potassium	5.0	U	5.0
Selenium	0.010	U	0.010
Silver	0.010	U	0.010
Sodium	5.0	U	5.0
Zinc	0.020	U	0.020

Data qualifier key:

- E estimated value (see cover page)
- M duplicate injection precision not met
- N spike recovery not within control limits
- S determined by MSA
- W post-digestion spike for Furnace AA is out of control limits (85-115%), while sample absorbance is <50% of spike absorbance
- * duplicate analysis outside control limits
- + Correlation coefficient for the MSA <0.995
- B < CRDL but >= IDL
- U none detected
- 'blank' positive result

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

SAMPLE ID: LAB BLANK #1

SAMPLE DATE:

SAMPLE MATRIX: SOIL

	Note		Reporting		Date	Method
Test Name	Ref	Result	Limit	Units	Analyzed	Reference
9071/418.1 for TPH		100	10	MG/KG	12/30/93	EPA9071

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME: BTEX - Purge and Trap

METHOD REFERENCE: EPA8020

SAMPLE ID: LAB BLANK #1
SAMPLE DATE: not spec
SAMPLE MATRIX: SOIL
ANALYSIS DATE: 12/22/93
DILUTION FACTOR: 1.0

UNITS: UG/KG Reporting Result Limit

Benzene	ND	1
Ethylbenzene	ND	1
Toluene	ND	1
<pre>Xylenes (total)</pre>	ND	1

Total BTEX concentration: Not Detected

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX

(512) 892-6684 409832-003-01 Work Order: B3-12-246

IV. Methodology

Requested analyses were performed according to the following methods.

TEST NAME Alkalinity, Titrimetric TEST CODE 310_1

Alkalinity EPA 310.1 - Chemical Analysis of Water and Wastewater.

Titrimetric with sulfuric acid.

TEST NAME TPH - IR TEST CODE 418_1

418 1 Method 418.1: Total Recoverable Petroleum Hydorcarbons,

infrared spectrophotmetric method. Methods for the

chemical analysis of water and wastes. USEPA.

TEST NAME ICP Metals TEST CODE 6010

Metals by ICP Inductively coupled emission spectroscopy according to

Method 6010, "Test Methods for Evaluating Solid Waste

Physical/Chemical Methods", SW-846, Third Edition.

TEST NAME Hazardous Substance Vols. TEST CODE 8240TK

Hazardous Substance Method 8240, SW-846, Test Methods for Evaluating Solid

List Volatiles Wastes, Third Edition. GC/MS Purge and Trap analysis.

TEST NAME ABN HSL GC/MS Extractables TEST CODE 8270TK

Hazardous Substance Method 8270, SW-846, Test Methods for Evaluating Solid

List Extractables Waste, Third Edition. Acid/Base-Neutral extraction

followed by GC/MS analysis.

TEST NAME Phenolics TEST CODE 9066

Phenolics SW-846 Method 9066. Total Recoverable Phenolics.

Colorimetric, Automated 4-AAP with Distillation.

Equivalent to EPA Method 420.2.

TEST NAME 9071/418.1 for TPH TEST CODE 9071IR

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME 9071/418.1 for TPH

TEST CODE 9071IR

TEST CODE BTEX

9071 Prep and IR Analysis

Method 9071, SW846, Test Methods for Evaluating Solid Waste, Third Edition. Soxhlet extraction from Method 9071 using freon and infrared analysis of the extract using Method 418.1.

TEST NAME Arsenic - Graphite Furnace TEST CODE AS_GF

Arsenic

Graphite Furnace

TEST NAME BTEX - Purge and Trap

Method 7060, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. EPA 206.2-Technical Additions to Methods for Chemical Analysis of Water and Wastes, EPA-600/4-82-055, December 1982.

BTEX

Method 8020, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. This technique uses a purge and trap with gas chromatography (GC) and photo ionization detection (PID) with a five point curve. This method exceeds the requirement of Method 602. Prep method is 5030.

TEST NAME Chloride by Ion Chron. TEST CODE CL_IC

Chloride USEPA 300.0 - The determination of inorganic anions in

water by ion chromatography.

TEST NAME Chemical Oxygen Demand TEST CODE COD

COD EPA 410.4 - Chemical Analysis of Water and Wastewater.

Colorimetric analysis for Chemical Oxygen Demand.

TEST NAME Chromium VI TEST CODE CR_VI

Chromium VI Method 7196, SW-846, Test Methods for Evaluating Solid

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME Chromium VI

TEST CODE CR VI

Wastes, Third Edition. Colorimetric analysis. Equivalent to Standard Methods 3500-Cr D.

TEST NAME Mercury

TEST CODE HG AA

Mercury

Method 7471, SW-846, Test Methods for Evaluating Solid Wastes, Third Edition. Cold vapor atomic absorption.

Method 7470 is used for water.

Method 245.5-"Technical Additions to Methods for

Chemical Analysis of Water and Wastes,"

EPA-600/4-82-055, December 1982.

TEST NAME Metals

TEST CODE ICPTK4

Method not available.

TEST NAME Mitrate and Mitrite

TEST CODE MO3NO2

Nitrate + Nitrite

Method 353.2-Chemical Analysis of Water and Wastewater. Colorimetric Automated Cadmium Reduction method using

Lachat autoanalyzer for NO3 and NO2 as N.

TEST NAME Lead - Graphite Furnace

TEST CODE PB GF

Lead

EPA 7421, SW-846, Test Methods for Evaluating Solid

Graphite Wastes, Third Edition.

Furnace

EPA 239.2-Technical Additions to Methods for Chemical

Analysis of Water and Wastes," EPA-600/4-82-055,

December 1982.

TEST NAME Silica

TEST CODE SIO2

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME Silica

TEST CODE SIO2

Silica

Method 370.1-Chemical Analysis of Water and Wastewater. Colorimetric Analysis. This is equal to ASTM D859B.

TEST NAME Sulfate by Ion Chron.

TEST CODE SO4_IC

Sulfate

USEPA Method 300.0 - The Determination of Inorganic

Anions in Water by Ion Chromatography.

TEST NAME Total Dissolved Solids

TEST CODE TDS

Total Dissolved

Solids

Method 160.1-Chemical Analysis of Water and Wastewater.

Gravimetric analysis.

TEST NAME Total Kjeldahl Nitrogen

TEST CODE TEN_N

Kjeldahl Nitrogen

Method 351.3-Chemical Analysis of Water and Wastewater.

Digestion and colorimetric analysis.

TEST NAME Total Organic Carbon

TEST CODE TOC

Total Organic

Carbon

Method 415.1-Chemical Analysis of Water and Wastewater.

Chemical oxidation and nondispersive

infrared analysis. Equivalent to SW-846 Method 9060. Sample prep is instrument manufacturer specific.

TEST NAME Total Suspended Solids

TEST CODE TSS

Total Suspended

Solids

Method 160.2-Chemical Analysis of Water and Wastewater. Filtration and gravimetric analysis of non-filterable

residue.

TEST NAME Total Phosphorus

TEST CODE T_P

Total Phosphorus

Method 365.3-Chemical Analysis of Water and Wastewater.

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Company: IT CORPORATION

Date: 01/11/94

Client Work ID: D.O.5001

IT ANALYTICAL SERVICES

AUSTIN, TX (512) 892-6684

409832-003-01 Work Order: B3-12-246

TEST NAME Total Phosphorus

TEST CODE T_P

Digestion and colorimetric analysis.

TEST NAME ICPES Digestion - Water TEST CODE 23005

Water Digestion Method 3005A, SW-846, Test Methods for Evaluating Solid

Wastes, Third Edition. Digestion procedure for the preparation of surface and ground water samples for analysis by flame atomic absorption spectroscopy and inductively coupled plasma spectroscopy. The procedure

determines total recoverable or dissolved metals.

TEST NAME GFAA Digestion - Water TEST CODE 23020

Water Digestion Method 3020, SW-846, Test Methods for Evaluating Solid

Wastes, Third Edition. Acid digestion technique for

Graphite Furnace.



CHAIN OF CUSTODY RECORD* ANALYSIS REQUEST AND

6312276 Reference Document No. 423305 Page 1 of Z

Bill to:5 409832-03.0

Samples Shipment Date 7 12-17-93

ITAS AUSTIN Lab Destination ⁸ Lab Contact ⁹

Sample Team Members 2 Kripschenand MAN Profit Center No. 3 M. Wilsen 352 7

Project Name/No. 1717KV - 500/

Project Manager 4 Timmy Taylor

KARMON DEAMB Project Contact/Phone 12 D. m. Great

Report to: 10 1 Jun Jennings

White: To accompany sample

Purchase Order No. ⁶ ゲのをガス・ひう	Carrier/Waybill No. 13 Fed Ex 8460755892	382 IT- AUSTIN
Required Report Date 11 Norma	ONE CONTAINES PER LINE	-

							-			5
Sample ¹⁴ Number	Sample ¹⁵ Description/Type	Date/Time ¹⁶ Container Collected Type	Container Type	Sample 18	Pre- ¹⁹ servative	Requested Testing 20 Program	Condition on Receipt	n 21	Disposal ²² Record No.	5
M/646	Trip Blank	17-2-93	Cleor	40ml	Hel	8240	6 00 4 1 5 Se	1. R.A.S	83271020A	Yellow
4/647	Water		Amber	C.	7000	8270				: Field
		-	1	16	Hzzon	TR8H-418.1				d copy
				JM025	H2504	9066 - phenols				/
				Tuss	4204	410.4, 415.1				
			7	7422	H2504	351.3, 353.2				*S
			Poly	77	7000	Standard Graind Water	re v			ee ba
		7	7	Juas	14103	metals	$ \uparrow $			ck of
Special Instructions: ²³	ns: ²³									form
Possible Hazard Identification: ²⁴ Non-hazard J Flammable J Sk	l Identification: ²⁴ Flammable 」 Skin Irritant 」		Poison B	Unknown		Sample Disposal: ²⁵ Return to Client 」 Dispo	Disposal by Lab	Archive	(mas.)	for spe
Turnaround Time Required: 26 Normal A Rush _	Bequired: 26		SZ	Level: ²⁷	□	Project Specific (specify);				cial ins
1. Relinquished by ²⁸ , (Signature/Affiliation)	28/h W	Date: Time:		743	1. Received by (Signature/Affiliation).	1. Received by 28 [Signature/Affiliation]	is IT	Date: / . Time:	2/18/27	structio
2. Relinquished by		Date:	in.		2. Received by	ved by		Date.		ns.

Date. Time: Date: Time:

2. Received by (Signature/Affiliation) 3. Received by (Signature/Affiliation) (Signature/Affiliation) Date: Time: Time: Date: Time: 1. Relinquished by ²⁸ 2. Relinquished by (Signature/Affiliation) 3. Relinquished by (Signature/Affiliation) (Signature/Affiliation)

Comments: 29

MCA 3-15.9

6312246

Reference Document No.30 4233 Page 2 of 2	18-17-83		Disposal 23		8 3 24 70 2 0 B	fed 40:015														
ence Documen	Samples Shipment Date		Condition on 21 Receipt	60, 4 1°C See RURS												Ŋ				
		ER LINE	Requested Testing 20 Program	Crlot	OHXB	8240	BAFO	418.1	906¢	410.4,415.1	3573,353.2	SCŃ	metals	CrbF	8240-BTEX	4181-TRPH				
INALYSIS REQUEST AND OF CUSTODY RECORD (cont.)*	108832-03.0	ONE CONTAINER PER	nple 18 Pre-19 ume servative	125ml cool	40ml HCR	FOR HER	7090	16 1204	50ml 14,504	250nl Hosog	250nl 16504			125ml cool	7000 745	7		/		
ANALYSIS F OF CUSTOR	Project No.	ONE CO	Container 17 Sample 18 Type Volume	Poly 1/2	cleas 4		Amber	7	8 / B	1 38	1 38	Poly 1		1 / 120	Clear 125m	71				
CHAIN O	<i>\</i>		Date/Time 113 Collected	12-17-93	7	12-17-93								Ī	12-17-93	7				
IONAL OGY TION	TIMKER -SOO,		Sample 15 Description/Type	Water	1									\rightarrow	56:1	ブ				
INTERNATIONAL TECHNOLOGY CORPORATION	Project Name		Sample 14 Number	17/647	71	4/648									141649	71				

Yellow: Field copy

White: To accompany samples

*See back of form for special instructions

Auxiliary Data Summary 01/11/94

Work order : B312246

Sample ID : A1647

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
02B	418_1	B312246-07B	1222TPHIR1	12/22/93	12/28/93	1.0
02C	310_1 9066 CL_IC COD CR_VI NO3NO2 SIO2 SO4_IC TDS TKN_N TOC TSS T_P	B312246-07C B312246-07C B312246-07C B312246-07C B312246-07C B312246-07C B312246-07C B312246-07C B312246-07C B312246-07C B312246-07C B312246-07C B312246-07C	1227310_11 1 122790663 0110CL_IC1 1228C0D2D 1218CR_VI1 0105N03N02 1229SI022 110S04_IC 1222TDS1 0108TKN_N1 1229TOC1 1222TSS1 0108T_P1	12/27/93 01/10/94 12/28/93	01/10/94 12/28/93 12/18/93 01/05/94 12/29/93 01/10/94 12/22/93 01/10/94 12/29/93 12/22/93	25.0 1.0 10.0 10.0 25.0 1.0 1.0
02D	AS_GF HG_AA PB_GF	B312246-07D B312246-07D B312246-07D	122830202 1229HG_AA2 122830202	12/28/93 12/29/93 12/28/93	12/29/93	1.0

Auxiliary Data Summary 01/11/94

Work order : B312246

Sample ID : A1648

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
03B						
	418_1	в312246-07В	1222TPHIR1	12/22/93	12/28/93	1.0
03C	310 1	B312246-07C	1227310 11 1	2/27/93	12/27/93	1.0
	9066	B312246-07C	122790663	12/27/93	01/06/94	1.0
	CL IC	B312246-07C	0110CL_IC1	01/10/94	01/10/94	5.0
	COD	B312246-07C	1228COD2D	12/28/93	12/28/93	
	CR VI	B312246-07C	1218CR_VI1	12/18/93	12/18/93	1.0
	NO3NO2	B312246-07C	0105NO3NO2	01/05/94	01/05/94	10.
	SIO2	B312246-07C	122951022	12/29/93	12/29/93	25.0
	SO4 IC	B312246-07C	0110SO4_IC	01/10/94	01/10/94	5.0
	TDS	B312246-07C	1222TDS1	12/22/93	12/22/93	1.0
	TKN_N	B312246-07C	0108TKN_N1	01/08/94	01/10/94	1.0
	TOC	B312246-07C	1229TOC1	12/29/93	12/29/93	1.0
	TSS	B312246-07C	1222TSS1	12/29/93	12/22/93	1.0
	T_P	B312246-07C	0108T_P1	01/08/94	01/10/94	1.0
03D						
	AS_GF	B312246-07D	122830202	12/28/93	01/07/94	1.0
	HG AA	B312246-07D	1229HG AA2	12/29/93	12/29/93	1.0
	PB_GF	B312246-07D	122830202	12/28/93	12/31/93	1.0

Auxiliary Data Summary

Work order : B312246

Sample ID : A1648-MS

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
04B					45 455 455	
	418_1	B312246-07B	1222TPHIR1	12/22/93	12/28/93	1.0
04C	310_1	B312246-07C	1227310_11 1	2/27/93	12/27/93	1.0
	9066	B312246-07C	122790663	12/27/93	01/06/94	1.0
	CL_IC	B312246-07C	0110CL_IC1	01/10/94		
	COD	B312246-07C	1228COD2D	12/28/93		
	CR_VI	B312246-07C	1218CR_VI1	12/18/93	12/18/93	1.0
	NO3NO2	B312246-07C	0105NO3NO2	01/05/94	01/05/94	10.0
	SIO2	B312246-07C	122951022	12/29/93	12/29/93	25.0
	SO4_IC	B312246-07C	0110SO4_IC	01/10/94	01/10/94	5.0
	TDS	B312246-07C	1222TDS1	12/22/93	12/22/93	1.0
	TKN_N	B312246-07C	0108TKN_N1	01/08/94	01/10/94	1.0
	TOC	B312246-07C	1229TOC1	12/29/93	12/29/93	1.0
	TSS	B312246-07C	1222TSS1	12/29/93	12/22/93	1.0
	T_P	B312246-07C	0108T_P1	01/08/94	01/10/94	1.0
04D						
	AS GF	B312246-07D	122830202	12/28/93	01/07/94	1.0
	HG AA	B312246-07D	1229HG AA2	12/29/93	•	
	PB_GF	B312246-07D	122830202	12/28/93	12/31/93	

Auxiliary Data Summary 01/11/94

Work order: B312246

Sample ID : A1648-MSD

FRAC	Tests	Blank Reference	Batch ID	Prep Date	Analysis Date	Dil. Factor
05B						
	418_1	B312246-07B	1222TPHIR1	12/22/93	12/28/93	1.0
05C	310_1	B312246-07C	1227310_11 1	.2/27/93	12/27/93	1.0
	9066	B312246-07C	122790663	12/27/93	01/06/94	1.0
	CL_IC	B312246-07C	0110CL_IC1			
	COD	B312246-07C	1228COD2D	12/28/93	12/28/93	1.0
	CR_VI	B312246-07C	1218CR_VI1	12/18/93	12/18/93	1.0
	NO3NO2	B312246-07C	0105N03N02	01/05/94	01/05/94	10.0
	SIO2	B312246-07C	1229SI022	12/29/93	12/29/93	25.0
	SO4_IC	B312246-07C	0110SO4_IC	01/10/94	01/10/94	5.0
	TDS	B312246-07C	1222TDS1	12/22/93	12/22/93	1.0
	TKN_N	B312246-07C	0108TKN_N1	01/08/94	01/10/94	1.0
	TOC	B312246-07C	1229TOC1	12/29/93	12/29/93	1.0
	TSS	B312246-07C	1222TSS1	12/29/93	12/22/93	1.0
	T_P	B312246-07C	0108T_P1	01/08/94	01/10/94	1.0
05D						
	AS GF	B312246-07D	122830202	12/28/93	01/07/94	1.0
	HG AA	B312246-07D	1229HG AA2	12/29/93		1.0
	PB GF	B312246-07D	122830202	12/28/93	•	1.0
		D312240 07D	122030202	12/20/55	12,01,00	2.0

Work order : B312246

Sample ID : LAB BLANK #1

		Blank	Batch	Prep	Analysis	Dil.
FRAC	Tests	Reference	ID	Date	Date	Factor
07B						
	418_1	B312246-07B	1222TPHIR1	12/22/93	12/28/93	1.0
07C	310_1	B312246-07C	1227310_11 1	2/27/93	12/27/93	1.0
	9066	B312246-07C	122790663	12/27/93		1.0
	CL_IC	B312246-07C	0110CL IC1	01/10/94	• •	
	COD	B312246-07C	1228COD2D	12/28/93		
	CR_VI	B312246-07C	1218CR VI1	12/18/93		
	NO3NO2	B312246-07C	0105NO3NO2	01/05/94	• •	
	SIO2	B312246-07C	122951022	12/29/93	•	
	SO4_IC	B312246-07C	0110SO4 IC	01/10/94	• •	1.0
	TDS	B312246-07C	1222TDS1	12/22/93	•	1.0
	TKN_N	B312246-07C	0108TKN N1	01/08/94	•	1.0
	TOC	B312246-07C	1229TOC1	12/29/93	•	1.0
	TSS	B312246-07C	1222TSS1	12/29/93	•	1.0
	T_P	B312246-07C	0108T_P1	01/08/94		1.0
07D						
0,0	AS GF	B312246-07D	12222222	10/00/03	01/07/04	
	HG AA	B312246-07D B312246-07D	122830202	12/28/93	• •	1.0
	PB GF	B312246-07D	1229HG_AA2	12/29/93		1.0
	r n_Gr	B312246-U/D	122830202	12/28/93	12/31/93	1.0

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Pale : 2

APPENDIX A

DEFINITIONS

ND(U)	-	Analyte was analyzed for, but not detected. The value given after the ND or "U" is the detection limit for that compound.
A	-	The compound denoted with an "A" indicates a suspected aldol condensation product.
В	-	Indicates the compound was also detected in the blank, but at levels less than 5X the detection limit. Values for this compound may be suspect.
J	-	Indicates the compound was detected in the sample, but at levels less than the detection limit, but above the MDL. Results snould be requarded as estimated.
D	-	Indicates that the compound was identified in an analysis at a secondary dilution factor.
И	-	Indicates presumptive evidence of a compound. This flag is used for tentatively identified compounds.

MS	-	Matrix Spike	/ -		Micrograms/Liter
MSD	-	Matrix Spike Duplicate	UG/KG	_	Micrograms/Kilogram
RPD	_	Relative Percent Difference	MG/KG	-	Milligrams/Kilogram
		Detection limit	MG/L	_	Milligrams/Liter
עט		becection limit	%REC	_	Percent Recovery

OC Acceptance Limits

Method 8240	Water	3011	Method 8270	Water	Soil
Surrogate & Recover BFB Dichloroethane Toluene-d8	86-115 76-114	74-121 70-120 31-117	Surrogate & Recoveries Nitrobenzene-d5 2-Fluorobiphenyi Terpnenyi-d14 Phenoi-d5 2-Fluorophenoi 2,4,6-Tribromophenoi	35 - 114 43 - 116 33 - 141 10 - 94 21 - 100 10 - 123	30 - 1 $18 - 1$
Matrix Spike Limits 1,1-Dichloroethene Trichloroethene Benzne Toluene Chlorobenzene	61-145 71-120 76-127 76-125 75-130	59-172 62-137 66-142 59-139 60-133	Matrix Spike Limits(%) Phenol Chlorophenol 1,4-Dichloropenzene N-Nitroso-di-propylamine 1,2,4-Trichloropenzene 4-Chloro-3-methylphenol Acenaphthene 4-Nitrophenol 2,4-Dinitrotoluene Pentachlorophenol	14 - 99 19 - 107 18 - 101 32 - 108 24 - 109 31 - 111 33 - 110 1 - 141 35 - 106 1 - 147	17 - 1 30 - 1 21 - 1 34 - 1 30 - 1

METALS CONTROL LIMITS

ICP: ± 20% for MS/MSD & Duplicate

GF: Control Charts for MS/MSD; ± 20% for Dup

ICV/CCV

GF ICV ± 20% GF CCV ± 20% ICP ICV/CCV ± 10% HG AA ± 20%

CONTROL LIMITS GRAPHITE FURNACE/MERCURY

ANALYTE	MATRIX	LIMITS	COMMENTS
Hg	water	21 - 170	Control Charts (B inst.)
Hg	soil	44 - 150	Control Charts (B)
As	water	59 - 150	D
As	soil	75 - 125	D
As	water	52 - 140	С
As	soil	35 - 142	С
Pb	water	48 - 153	٥
Pb	soil	⁻ 5 - 125	C
Pb	water	33 - 163	C
Pb	soil	75 - 125	С
Se	water	37 - 136	D
Se	soil	27 - 118	D ·
Se	water	20 - 147	С
Se	soil	2.6 - 139	С

30	BATCH ID FOR WE	ET CHEM	- Test C	cae. <u>TD</u>	_
PREPRE	EP METHOD:				
	P METHOD:				
	S METHOD: T)5			
	ATCH DATE.	12293			
INST	RUMENT ID: 1	\			
SET	(BATCH) #:				
					
Work Orders/Fractions	Associated With	Batch			
Lad Samble TU'S	Batch QC ID's		-		
: B312246-02c	_LCS ID: LCS 1	22293	- /		
2 03C 3 Rupot / D4C	LCSD ID: NA		_		
	MB ID:		_		
- + b3C 65C	MS ID:		-		
5B312247-010	MSD ID:		_		
6 B312263-DID	REP ID: B312				
8 B3(2276-23D		P46 -05	5 C		(h
9 - 050	Batch QC Result	S		MDL:	PQL: 10
10	Sample ID	Postula	Linita	18-04	15
		Result	Units	Analyst	!Date/Time
10	Method Blk	AU	ms/L	Analyst	Date/Time
10	Method Blk !	NA 95.4	ms/L % Rec	Analyst	
10 :1 :2	Method Blk LCS % Rec LCSD % Rec	AU	MS/L % Rec % Rec	Analyst	
10 :1 :2 :3	Method Blk !	NA 95.4	1% Rec 1% Rec % RPD	Analyst	
10 11 12 13	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RPD	NA 95.4	% Rec % RPD % Rec	Analyst	
10 :1 :2 :3 :2 :5 16	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RPD: MS % Rec	P. 20 P. 20 P. 40	1% Rec 1% Rec % RPD	Analyst	
10 :1 :2 :3 :2 :5 16 17 18	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD	Analyst	
10 11 12 13 15 16 17 18 19	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	P. 20 P. 20 P. 40	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD	Analyst	
10 :1 :2 :3 :2 :5 16 17 18	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD	Analyst	
10 11 12 13 15 16 17 18 19 20	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD	Analyst	
10 11 12 13 15 16 17 18 19	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD	Analyst	
10 11 12 13 15 16 17 18 19 20	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD	Analyst	
10 11 12 13 15 16 17 18 19 20	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD	Analyst	
10 11 12 13 15 16 17 18 19 20	Method Blk LCS % Rec LCSD % Rec LCS/LCSD RPD: MS % Rec MSD % Rec MS/MSD RPD	A 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	1% Rec 1% Rec % RPD % Rec 1% Rec 1% RPD	Analyst	

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Work Orders/	ractions	Associated W	itii batch				
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182004L	.096	LCS ID:LCS	122193-	_1			
2 ,	030	LCSD ID: NA					
7 ans	D4C	MB ID: NA					
436 4(05C	MS ID: NA					
5		MSD ID: NA					
<u>6</u> 7		REP ID: B3/	2946-04	10			
8		Botton CO B	17916 02			₁ /\	~
9		Batch QC Res	ults		MDL:	PQL: 10	
10		Sample ID	10 11				_
11		Method Blk	Result	Units		!Date/Time	!
12		LCS % Rec	I UA	18/ Dag	SAT	19/29 10:00	_
13/		LCSD % Rec	95.5 NA	1% Rec			_
1900	''	LCS/LCSD RP		1% Rec % RPD			_
15		MS % Rec	-	% Rec			_
16 120		MSD % Rec		1% Rec			-
17		MS/MSD RPD		1% RPD			-
18		REP RPD	430/14	7% RPD	/		-
19			123/6/				•
/20							
Comments:							

Tig-14: 10/01/10

Code: MLA

QC BATCH ID FOR (GFAA/CVAA - Test Code:
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	7470
BATCH DATE:	12/29/93
INSTRUMENT ID:	· A
SET (BATCH) #:	(5)

Work Orders/Fractions Associated With Batch

Lab Sample ID's	Batch QC ID's		•			
1 B312214 - O1B 2 02B 3 03B 4 04B 5 65B	LCS ID: TCV LCSD ID: CCU-1 MB ID: TCB MS ID: B312 MSD ID: REP ID:	050	M5			
7 07G 8 09G	Batch QC Resul	ts		MDL: <u>0.</u> (0.00 PQL: <u>0.02</u> 0	ک
9 53	Sample ID	Result	Units	Analyst	Date/Time	
10 113 11 12B	Method Blk	60	mg/L	MLA	12/09/9322:0	ပ
12 130	LCS % Rec	113	% Rec			
13 14/5	LCSD % Rec	120	% Rec			
14 831226-020	LCS/LCSD RPD		% RPD			
15 03h	MS % Rec 123		% Rec			
16 042	MSD % Rec 124		% Rec			
17 V OSD	MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RPD MS/MSD RP	815.68	% RPD			
18	REP RPD		% RPD	1 0		
19 MLA 18/07					•	
20						
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QC BATCH ID FOR GFAA/CVAA - Test Code: Phocae
PREPREP METHOD:
PREP METHOD: 23020
ANALYSIS METHOD: 7421
BATCH DATE: 12-28-93
INSTRUMENT ID: C
SET (BATCH) #: 2

Work Orders/Fractions Associated With Batch

Lab Sample ID's
1 B312245-08B
2 B312246-02D
3 √ -03D
4 B312266-12B
5
6
7
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11
12 TON
13 /12-22-93
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Batch	QC	ID's
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LCS ID: LCS20 1228-2

LCSD ID: LCS0201228-2

MB ID: PB201228-2

MS ID: B312246-040 MS

MSD ID: 1 - 050MS

REP ID: V -030 DUP

Batch QC Results

Analyst Date/Time Result Units Sample ID 12-31-93 12:28 Method Blk ⟨0.0030 36 LCS % Rec % Rec 107 % Rec LCSD % Rec 1)1 % RPD LCS/LCSD RPD 3.67 % Rec MS % Rec 96.0 % Rec MSD % Rec 76.5 % RPD MS/MSD RPD 0.52 % RPD REP RPD 0

MDL: @ 2.9% PQL: 0.0030

Comments:	

QC BATCH ID FOR WET CHEM - Test Code: To(
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD: TOC	
BATCH DATE: 12/29 12:00	
INSTRUMENT ID: N	
SET (BATCH) #: \	

Lab Sample ID's 1B312245-08B 2 B312246-00C 5 B312248-01C 6 B312202-81D **¥**7 0 10-E0CE1E 8 8 10 B312266-12B 11 12 13 14 15 16 17 18 19

20

Batch QC ID's

LCS ID: LCS 122993-1
LCSD ID: LCSD 122993-1
MB ID: MB 122993-1
MS ID: B312246-04C
MSD ID: B312246-05C
REP ID: LCSD 122993-1

Batch QC Results

Sample ID	Result	Units	Analyst	Date/Time
Method Blk	0	ms/	SAT	00:61 PCKI
LCS % Rec	108 101	% Rec		
LCSD % Rec	3 pt 1 100			
LCS/LCSD RPD	0.995 2.74 9	% RPD		
MS % Rec	102	% Rec		·-
MSD % Rec	99.0	% Rec		
MS/MSD RPD	2,99	% RPD		
REP RPD	2,74	% RPD	$\bigcup V$	V

MDL:

PQL: 1. 0 Mg

Comments: \$ B312202-020 WAS PERON 13/94
Pesult: ND
LCS 1/3/94: 108 % 100 0/0 Per
LCS 1 3 54: H2 / Rocar 103 % loc
2.74% RPD 50,976 (4)

	QC BATCH ID FOR ICPES
PREPREP METHOD:	N/.3
PREP METHOD:	230 T
ANALYSIS METHOD:	6010
BATCH DATE:	12-26-93
INSTRUMENT ID:	B
SET (BATCH) #:	2

Lab	Sampi	e ID's	
	? ¬ •		•
1) '	5312.	214-01.4	
2)		02.4	
3)		∂.3.0	
4)	J	04,4	
5) (3122	45 -08 A	
6) (33122	46-020	
7)		c39	
8)		030	برد
9)		040	MI
10)	V	UŚD	mil
11) 0	3122	47-01C	
12) (53122	266-12B	
		9-014	
14)		0217	
15)	B312	270-014	
16) (33122	76 - USC	
17)	1	りざし	
18) 3	312 (071 -023	
19)		038	
20)		043	

LCS ID: LCS 05127893 - 1
LCSD ID: LCSDCS 122893-1
MB ID: PGOS122893-1
MS ID: B312246-049
MSD ID: 3312246-050
REP ID: 6312246-039
PBD05122893-/

Batch QC Samples

ANALYTES REQUIRED FOR BATCH:

Ag Al As B Ba Be Ca Cd Co Cr Cu Fe K Mg Mn Mo Na $\stackrel{\times}{\cancel{\bot}}\stackrel{\times}{$

QC Batch ID	
Preprep Method:	
Prep Method:	3005
Analysis Method:	6010
Batch Date:	12/28/93
Instrument ID:	В
Batch (Set) #:	1

Batch QC Information	
Matrix: WATER	Data Reported to PQL
Units: MG/L	
	Corr. Fact.
Method Blk ID:	PB05122893-1 1
LCS ID:	LCS05122893-1 1
LCSD ID:	LCSD05122893-1 1
MS Sample ID:	B312246-04D MS 1
MSD Sample ID:	B312246-05D MSD 1
Rep Sample ID:	B312246-03D DUP 1

Page 1 of 2

	Replicate	Sample Da	ta		Blank /	LCS	S Batch QC							
	Original			П	Metho	od		LCS		Γ	LCSD			% RPD for
1	Result for	Replicate			Blank		LCS true	Conc.	LCS		Conc.	LCSD		LCS/LCSD
Analyte	Replicate	Result	% RPD	d	Result		Value (mg/L	Found	% Rec.	a	Found	% Rec.		Recoveries Q
Ag	ND	ND	N/A		< 0.0	10	1	0.9358	94		0.94	94		0.30
Al	1.469	1.391	5.45		< 0.3	20	10	10.15	102		10.17	102		0.20
As					< 0.	10	1	1.04	104		1.06	106		1.53
В					< 0.2	20	1	0.9016	90		0.92	92		2.02
Ba	0.5558	0.5674	2.07		< 0.5	20	1	0.993	99		0.99	99		0.72
Ве	ND	ND	N/A		< 0.00	50	1	0.9713	97		0.98	98		0.71
Ca	67.74	69.09	1.97		< 5	0.0	20	20.3	102		20.41	102		0.54
Cd	ND	ND	N/A		< 0.00	50	1	0.9619	96		0.97	97		0.73
Co					< 0.0	50	1	0.9393	94		0.94	94		0.49
Cr	0.0213	0.019	11.41		< 0.0	10	1	0.9762	98		0.98	98		0.49
Cu	ND	ND	N/A		< 0.02	25	1	0.9408	94		0.94	94		0.12
Fe	1.085	1.075	0.93		< 0.	10	10	10.34	103		10.37	104		0.29
K	ND	ND	N/A			.0	20	19.64	98		19.50	98		0.72
Mg	41.56	42.51	2.26		< 5	.0	20	20.18	101		20.20	101		0.10
Mn	0.0156	0.0156	0.00		< 0.0	15	1	0.9361	94		0.94	94		0.50
Мо					< 0.1	10	1	0.9318	93		0.94	94		0.83
Na	45.23	46.03	1.75		< 5	.0	20	20.4	102		20.40	102		0.00
Ni	ND	ND	N/A		< 0.04	40	1	0.9269	93		0.94	94		1.20
РЬ	ND	ND	N/A		< 0.05	50	1	0.9286	93		0.96	96		3.02
Sb	ND	ND	N/A		< 0.06	60	1	0.9896	99		1.00	100		0.99
Se	ND	ND	N/A		< 0.1	10	1	0.9278	93		0.97	97		4.27
Si					< 1	.0	10	10.04	100		10.23	102		1.87
Sn					< 0.1	10	1	0.9643	96		0.93	93		3.75
Ti					< 0.1	10	1	0.9902	99		0.99	99		0.29
П					< 0.2	20	1	0.982	98		1.00	100		1.69
V					< 0.05	50	1	0.9406	94		0.94	94		0.38
Zn	ND	ND	N/A		< 0.02	20	1	0.9484	95		0.96	96		0.81

QC Data Review	ved By:	KmB Date/Time: 12/29/93 2300	
Comments:	All	ac within control limits	
			_

Qualifiers:

N - LCS % Recovery was outside method limits of 80-120 %.

R - % RPD for LCS/LCSD was outside control limit of 20 %.

^{*} Replicate RPD was outside method control limit of 20 %

1

Batch (Set) #:

Batch QC Information		
Matrix: WATER	Data Rep	ported to PQL
Units: MG/L		
	_	Corr. Factor
Method Blk ID:	PB05122893-1	1
LCS ID:	LCS05122893-1	1
LCSD ID:	LCSD05122893-1	1
MS Sample ID:	B312246-04D MS	1
MSD Sample ID:	B312246-05D MSD	1
Rep Sample ID:	B312246-03D DUP	1

Page 2 of 2

	Spike Sam	ple Data											
Anabaa	Original Result for MS/MSD	MS Result	MS Spike Added	MS % Rec.	Q	MSD Result	MSD Spike Added	MSD % Rec.		% RPD for MS/MSD Recoveries		% RPD for MS/MSD Result As Replicates	a
Analyte	ND ND	0.9506	1.00	% Nec.	H	0.9509	1.00	95	7	0.03	۲	As Neplicates	۲
Ag Al	1.469	11.52	10.00	101	Н	11.59	10.00	101	\vdash	0.69			┝
As	1.405	11.02	10.00	101	Н	11.55	10.00	101	\vdash	0.00			⊢
	 				Н		f						┢
Ba	0.5558	1.525	1.00	97	Н	1.556	1.00	100		3.15	Н		H
Be	ND	1.004	1.00	100	Н	1.005	1.00	100	Н	0.10	П		一
Ca	67.74	89.59	20.00	109	П	93.65	20.00	130	Z	17.00	П		Γ
Cd	ND	0.972	1.00	97	П	0.9758	1.00	98		0.39			Г
Co					П								Γ
Cr	0.0213	0.9908	1.00	97	П	0.9911	1.00	97		0.03			
Cu	ND	0.9565	1.00	96		0.9612	1.00	96		0.49			Γ
Fe	1.085	11.03	10.00	99		11.05	10.00	100		0.20			
K	ND	22.27	20.00	111		22.57	20.00	113		1.34			
Mg	41.56	62.33	20.00	104		64.94	20.00	117		11.82			
Mn	0.0156	0.9508	1.00	94		0.9518	1.00	94		0.11			
Мо											Ц		
Na	45.23	58.19	20.00		N	60.59	20.00		Z		Ц		
Ni	ND	0.9421	1.00	94	Ц	0.9464	1.00	95		0.46			
Pb	ND	0.9767	1.00	98	Ц	0.9653	1.00	97		1.17	Ц		
Sb	ND	1.014	1.00	101	Ц	1.015	1.00	101		0.10	Ц		
Se	ND	0.9859	1.00	99	Ц	0.9937	1.00	99	Ц	0.79			
Si					Ц						Ц		Ц
Sn					Ц				Ц				Ц
<u>Ti</u>					Н				Ц				Н
TI					Н				Ц				Н
V	1	0.0000	1.00		Н	0.0500	4.00	00	\dashv	0.00	4		Н
Zn	ND	0.9608	1.00	96	Ш	0.9583	1.00	96		0.26			

Comments:	% Rec	بعر	Na	in	MS/MS	SD outsa	de control	limits	due 1	•	
matri	x unterf	يروبر	<u>u</u> / .	مريه	سيمامي	+ same	she matr	ix . %	Rec for	Ca	ż
MSD	outsi	de c	ontre	و د	emet.	for sam	e reason	AQQ	other (લેC	
	vether	Con	Ine	lu	mts.						

Qualifiers (Q):

- H Sample concentration was greater than five times the spike level.
- N Spike recovery was outside method control limits of 80-120 %.
- R Percent RPD for MS/MSD recoveries was outside method control limit of 20 %.
- D Sample concentration was greater than five times the spike level.

 The RPD was calculated between the MS and MSD results as replicates.

Method BTEX Batch QC summary

Reviewed	Batch Date	Instrument ID	Analyst
	12/22/93	GCF1	-
Sample Spiked	12/22/93 Method	Client	SAM Number
BLK SPIKE	втех		
Comments	Set (Batch)	Units	Matrix: Water/Soil
읒	<u>*</u>	ug/L	water

	1,3 CL2 Benzene	1,4 CL2Benzene	1,2 CL2Benzene	O-xylene	M+P Xylene	Ethyl benzene	Toluene	Benzene	Surr (BFB)				Analyte
	0.00	0.00	0.00	0.00	0.10	0.00	0.04	0.00	98.28				Lab Blank
	0.00	0.00	0.00	0.00	0.10	0.00	0.04	0.00	0.00			result	Matrix
				41.40	83.10	20.70	61.10	20.80	100.00		MS/MSD	amnt	Spike
				41.40	83.10	20.70	61.10	20.80	100.00	SPIKE	BLX	amnt	Spike
	0.00	0.00	0.00	43.03	89.00	20.83	61.81	19.89	106.00		Result	Spike	Blank
	0.00	0.00	0.00	43.63	89.77	21.57	63.56	20.55	103.00				MS result
	0.00	0.00	0.00	46.45	95.40	22.03	67.07	21.61	105.00				MS result MSD result
	#VALUE!	#VALUE!	#VALUE!	104%	107%	101%	101%	96%	106%		Rec	Spike %	Blank
	#VALUE!	#VALUE!	#VALUE!	105%	108%	104%	104%	99%	103%			Rec	MS %
	#VALUE!	#VALUE!	#VALUE!	112%	115%	106%	110%	104%	105%			Rec	MSD %
	#DIV/0!	#DIV/0!	#DIV/0!	6%	6%	2%	5%	5%	2%				% rpd
70-130	70-130	70-130	70-130	70-130	70-130	70-130	70-130	70-130	70-130			Limits	Accept

matrix spike evaluation. A blank spike and blank spike duplicate were prepared instead. Comment: Insufficient sample was available for matrix and

THIS QC APPLIES TO THE FOLLOWING SAMPLES:

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B312267 B312247 B312246 B312278

ACCEPTANCE LIMITS:

LCS: MS/MSD: RPD: 85-115% 70-130%

SURROGATES: <30% 75-125%

ITAS_Austin Volation Date/Time: 12/29/0	11es QA Spike Lot Summary LOTI: 3
Operator: SAB	Test/Hatrix: 8340/wacco
GC Column: 502.2	(Rtx) Operator: SAB
Type Lab Sample B3123 HSD UCS	ample ID Lab File ID (Y or N) 46-03 > E2463 -04 7 E 2464 -05 7 E 3465 -65 > E6599 pplies to the following Samples:
Client * Sample 10	Lab Sample Lab File 1D
01	B312246-01
<u> </u>	-02 -03
04	-04 -05
05	-07
87	
08	
18	
13	
13	
15	
[6]	
181	
19	
Compates	
Comments:	
• - Field used on	y if necessary.

•

· -

QC B	Batch ID
Prep Code/Dat	le:/
Test Code/Date	6: 8340 13/34/4
Set #: 1	Inst. ID: E

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY AND BLANK SPIKE RECOVERY

Lab Name: ITAS - Austin Date Ran: 12/29/93

>E2464 >E2465 >EBS29

QC BATCH ID

Prep Code/Date:

Sample Names:

Test Code/Date: 8240

1 12/29/93

CLIENT ID:

Matrix Spike - SAM Sample No. B312246 Matrix: WATER Set 4: 0

Inst.ID: E1

(5.000 ML TD 5 ML)

1.0 X DIL

: COMPOUND : NAME	SPIKE ADDED		CONC (ug/L)	: MS : 1 : Rec #	: QC :LIMITS : REC.	BLANK CONC (ug/L)	(ug/L)	BS QC
:1,1-Dichloroethene: Trichloroethene: Benzene: Toluene: Chlorobenzene:	_: 50.00 _: 50.00 _: 50.00 _: 50.00 _: 50.00	: .00 : 1.52 : .00 : .00	44.24 44.13 45.25 50.02	: 88 : 85	: 61 - 145 : 71 - 120 : 76 - 127 : 76 - 125 : 75 - 130		0 : 43.40 0 : 40.9 0 : 44.3 0 : 48.1 0 : 47.4	5 82 71 - 120 5 89 76 - 127 9 96 76 - 125

: COMPOUND	: SPIKE		MSD CONC.	:	MSD Z	;	Z	;	90	LIM	ITS	
I NAME	(ug/L		(ug/L)	1	REC		RPD		RPD	 -!===:		EC. =====
.======================================	=== =====	:===;		- , =				,				
11,1-Dichloroethene_	; 50.1	00 1	41.84	ļ	84	;	6	;	14	: 61	-	145
:Trichloroethene	50.0	00 1	43.48	;	84	;	2	1	14	1 71	-	120
Benzene	50.0	00 :	43.87	:	88	;	3	:	11	: 76	-	127
	50.4		47.88		96	- 1	4	1	13	; 76	-	125
:Toluene :Chlorobenzene	50 50	-	48.30		97	;	3	;	13	: 75	-	130
I CHIOLOGENZENE		;		:	-		_	1		_;		

- # Column to be used to flag recovery and RPD values with an asterisk.
- * Values outside of QC limits.

0 out of 5 outside limits.

Spike Recovery: 0 out of 10 outside limits.

SURROGATE RECOVERIES	>	E2464	>	E2465	>EBS29		LIMI	TS
Toluene - d8	ļ.		-		1 101			
:Brosofluorobenzene			-		: 100			
11,2-Dichloroethane - d4		104	;	107	: 101 :	; _;	76 -	114

ITAS - AUSTIN EXTRACTABLES QA LOT SUHVARY.

Prep Code/Date: 419.1 /12/12/9)
Test Code/Date: 7478 /12/12/9)
Set 1: ______Inst.ID: FT28

			Percent	
Type	Lab Sample ID	Result	Recovery	QC fimits
	1 02:224 44 1	4	l ND	< Reporting limit
Blank	B312346.8K	4.8	95	70 to 130%
Blank spike	BS	9.5	- S	70 to 130%
HS	Others.			Ra 70 to 130%
HSD	05msD.	10		RB 70 to 130%
,				' /3

This QA Spike Lot applies to the following Samples:

•	Client	Sam # + Fraction	Date of Prep
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Tinter IT Supposed V Tinke	B312246-62B (32B (31B) (312180-650) (30D) (312246-12B	12/12/93

Comments:	

ITAS - AUSTIN EXTRACTABLES QA LOT SUHHARY:

QC Batch ID

Prep	Code/Date	I S-IRI	12/50/9
Test	Code/Date	·/_	7
Set (Ba	Inst. ID:	

	1		Percent
Type	Lab Sample ID	Result	Recovery
Blank	18312306 - BIK 1	~	. I ND
Blank spike	B.5	5,4	1 96
HS	084	310	1 94
HSD	1 084	310	1 94

QC fimits < Reporting fimit 70 to 130% 70 to 130% 70 to 130%

This QA Spike Lot applies to the following Samples:

	Client	Sam # + Fraction	Date of Prep
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19	IT - Hon Tr - Slep. Trixer	10312300-01A 02A 03A 04A 05A 06A 07A 08A 09A 10A 02A 02A 02A 03A 04A 05A 06A 06A 07A	/2-30-93
20	l		

Comments:	

QC BATCH ID FOR	WET CHEM	- Test Code:	NO 3 NO, / N	3-PM —
PREPREP METHOD:				
PREP METHOD:				
ANALYSIS METHOD:	353.2			
BATCH DATE:	1-5-94			
INSTRUMENT ID:	A			
SET (BATCH) #:	3			

ab Sample ID's	Batch QC ID's		_		
1 1312246-026		5 01059			
2 03c	LCSD ID: LCS	0 01059	4-1		
3	MB ID: m	3 01059	14-1		
4	MS ID: 133/2				
5		246 -03	_		
6	REP ID:				
8	Batch QC Resul	ts		MDL:	PQL: <u>o.</u>
9		•		TA Luca	Data (Time
10	Sample ID	Result	Units		Date/Time
11	Method Blk	ND	mg/L	D5B	1-5-54 10:35
12	LCS % Rec	100	% Rec		
13	LCSD % Rec	98	% Rec		·
14	LCS/LCSD RPD	2.0	% RPD		
15	MS % Rec	90 +10	% Rec	ļ	
16	MSD % Rec	91-99	% Rec		
17	MS/MSD RPD	41	% RPD		
18	REP RPD		% RPD		
19					
20					
Comments:					

QC BATCH ID FOR V	WET CHEM - Test Code: 9066
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	9066
BATCH DATE:	12 - 27 - 93
INSTRUMENT ID:	A
SET (BATCH) #:	3.

Lab Sample ID's	Batch QC ID's				
1 B312246-02C 2 03C	LCSD ID: LC	S /2 279 SD /2 279	3- z		
3		3 122793			
4		2246-04			
5	MSD ID: B3/	2246-03			
6	REP ID: p3/	2246-02	2 2		O
8	Batch QC Resul	ts		MDL:_	PQL: <u> </u>
9			1	Analys	t Dete/Time
10	Sample ID	Result	Units		t Date/Time
11	Method Blk	ND	mg/L	non	1-6-94 17:0
12	LCS % Rec		% Rec	-	
13	LCSD % Rec		% Rec		<u> </u>
14	LCS/LCSD RPD		% RPD		
15	MS % Rec		% Rec		
16	MSD % Rec		% Rec	 	
17	MS/MSD RPD		% RPD		
18	REP RPD		% RPD	<u> </u>	
19					
20					
Comments:					

QC BATCH ID FC	OR WET CHEM - Test Code: <u>≤04-∓</u> C
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	300,0
BATCH DATE:	1-10-94
INSTRUMENT ID:	A
SET (BATCH) #:	

<u></u>	D 1.1. OC 10's				
Lab Sample ID's	Batch QC ID's		-		
1 1312246-02c ¹ 2 -035 ¹ 3 4 5	LCS ID: LCSO LCSD ID: LCSO MB ID: TCB MS ID: TS313 MSD ID: REP ID: LCSO	- PPOIL - NPOIL - 276 - 0	L L Y c' ~s 5 c' ~s o		
7	Batch QC Resul	lts		MDL:	PQL: <u>1-0</u>
9					
10	Sample ID	Result	Units	Analyst	Date/Time
11	Method Blk	<1.0	molL	B9G-	1/1494 10.00
12	LCS % Rec	48.8	% Rec		
13	LCSD % Rec	97.8	% Rec		
14	LCS/LCSD RPD		% RPD		
15	MS % Rec	84.0	% Rec		
16	MSD % Rec	81,0	% Rec		
17	MS/MSD RPD	3.64	% RPD		
18	REP RPD	1.02	% RPD		
19					
20					
Comments:					
			•		

QC BATCH ID FC	R WET CHEM - Test Code: CL-IC
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	300.0
BATCH DATE:	1-10-94
INSTRUMENT ID:	A
SET (BATCH) #:	

LCS ID: (CS 011094-1) LCSD ID: 1CSD011094-1 MB ID: TC13 1/10/94 MS ID: B312246-04c1 ms of 03 C MSD ID: LCS/LCSD REP ID: LCS/LCSD				
PQL: 1.0 mg				
st Date/Time				
- 160/24 10:02				

QC BATCH ID FOR WE	T CHEM - Test Code: TEN-N
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	351,2
BATCH DATE:	1-8-94
INSTRUMENT ID:	A
SET (BATCH) #:	1

.ab	Sample ID's	Batch QC ID's		-		
1	B312198-016	LCS ID: IC	V OLO	294-1		
2	020	LCSD ID: LC	5 0108	24-1		
3	B312246-02C	MB ID: M	B 01089	<u> 2</u> 4-1		
4	030	MS ID: β	312246.	04 C		
5	B312247-01B	MSD ID: B	312246 -	050		
6	B312276-03B	REP ID:		-		
7	053					201
8	B312327_010	Batch QC Resul	ts		MDL:	PQL: _ <i>_</i>
9	020		·	·		T
10	030	Sample ID	Result	Units		Date/Time
11	040	Method Blk	NO	mg/L	DSB	1/10/94 08:4
12	05H	LCS % Rec	82.0	% Rec		' '
13		LCSD % Rec	97.2	% Rec		·
14		LCS/LCSD RPD		% RPD		
15		MS % Rec	10098:4	% Rec		
16		MSD % Rec	102	% Rec		
17		MS/MSD RPD	1.98	% RPD		
18		REP RPD		% RPD		
19						
20						
Con	nments:					

OR WET CHEM - Test Code: TEP
_
365.4
1-8-47
A

Lab Sample ID's	Batch QC ID's					
1 B312241-026 2 L -036 3 B312327.010 4 -020 5 -030 6 -040	LCS ID: LCS O108 94-1 LCS ID: LCS O108 94-1 MB ID: PRW 010894-1 MS ID: B312246-040 ms 2003C MSD ID: -050 ms0 503C REP ID: -050 ms0 503C					
7 - 05H	Batch QC Resul	lts		MDL:	PQL: (51)	
9	Sample ID	Result	Units	Analyst	Date/Time	
10	Method Blk	<0.10	ML	OSB	1/10/94 10:40	
12	LCS % Rec	107	% Rec	1		
13	LCSD % Rec		% Rec			
14	LCS/LCSD RPD		% RPD			
15	MS % Rec	105	% Rec			
16	MSD % Rec	104	% Rec			
17	MS/MSD RPD	0.96	% RPD			
18	REP RPD % RPD V					
19						
20						
Comments:					-	

Mork Orders/Fractions Associated With Batch	PREP METHOD: ANALYSIS METHOD: 310_1 BATCH DATE. \$\frac{9}{2863} 2793 INSTRUMENT ID: \$\frac{1}{4}\$ SET (BATCH) #:	
183 224 -030 LCS D: LCS J 27-93- LCS D: LCS J 27-93- LCS J 27-93- LCS D: LCS J 27-93- LCS J 27-93-	Work Orders/Fractions Associated with Batch	
CSD D: LCSD D D D D D D D D D	Ead Sample ID's Batch QC ID's	
Sample ID	2	
Sample ID	Batch QC Results MDL: PQ	1.17
	Sample ID	

QC BATCH ID FOR WET CHEM - Test Code. 310_

QC BATCH ID FOR WET CHEM - Test Code: Sico
PREPREP METHOD:
PREP METHOD:
ANALYSIS METHOD: STO
BATCH DATE: 12/29/53
INSTRUMENT ID: A
SET (BATCH) #: ∂

Lab Sample ID's	
1 B312176-02C	
2 -03(
3 -07-34	1
4 B312046-D2C	
5 3C	
6 040	
7 65 C	
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12	
13 / A	
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16 / 0/23	
17	
18	
19	
20	

Batch QC ID's

LCS ID: 1_CS 122993-2

LCSD ID: L(SD 122993-2

T MB ID: MB 122993-2

MS ID: B312176-DYC

MSD ID: B312176-DSC

REP ID: LCSD 122993

Batch QC Results

				
Sample ID	Result	Units	Analyst	Date/Time
Method Blk	D	ms/L	SA	17/29
LCS % Rec	900	% Rec		
LCSD % Rec	96.0	% Rec		
LCS/LCSD RPD	6.45	% RPD		
MS % Rec	92.0	% Rec		
MSD % Rec	/ () /	% Rec		
MS/MSD RPD	12,2	% RPD]	
REP RPD	6.44	% RPD	<u> </u>	
HEP NPU	6.95	70 111 0	<u> </u>	'

MDL:_____ PQL: <u>\(\int_{\infty}\) \(\int_{\infty}\).</u>

Comments:			
		· · · · · · · · · · · · · · · · · · ·	

QC BATCH ID FC	OR WET CHEM - Test Code: COD
PREPREP METHOD:	
PREP METHOD:	
ANALYSIS METHOD:	COD
BATCH DATE:	19/98/53
INSTRUMENT ID:	
SET (BATCH) #:	20

Lab Sample ID's	ı
4 P2 122(1/2 N2)	^
1 B312246-02	•
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20	_

Bato	h QC	ID's	
Dan	// Q U		

LCS ID: LCS 122893-2 LCSD ID: LC>p/22853-2 MBID: MB 122893-2 MS ID: 3312246-04C MSD ID: B312246-05C REP ID: LCSD 122853-2

Batch QC Results

	Ana	lyst		/Time
	3	27	12	08 1P.DI
	1			
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	1	17	ı	1/

MDL:____ PQL: 2505/

Sample ID	Result	Units	Analyst	Date/Time
Method Blk	1	MS/L	SAT	12/08/16:00
LCS % Rec	96,4	% Rec		
LCSD % Rec		% Rec		
LCS/LCSD RPD		% RPD		
MS % Rec		% Rec		
MSD % Rec	1 1	% Rec		
MS/MSD RPD	293	% RPD		/
REP RPD	9 49	% RPD	V	V
11111111	I	<u> </u>		

Comments:	

rest Code/Date: \$220 /12-22-Set 1: _____Inst. ID: ____

Type	Lab Sample ID Lab File ID (Y or N)
Blank Sample HS	18312246-8LA 18312246-4B 3MS
ICS	1

This QA Spike Lot applies to the following Samples:

	4	Client Sample ID	Lab Sample ID	Lab file ID
10 1	3 4 5 6 7 8	Sample ID	B312246-2B -30 B312245-8B	

Comments:	

WATER SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: ITAS - Austin CLIENT ID: QC BATCH ID

 Sample Names:
 FG2468S
 FG246BLK
 Prep Code/Date:
 3520
 1/5/94

 Date Ran:
 1/6/94
 1/6/94
 Test Code/Date:
 8270
 1/5/94

Time Ran: 16.09 15.33 Set #: 1 Inst.ID: F

Matrix Spike - SAM Sample No. B312246BLK Matrix: WATER

(1000 ML TO 1 ML) 1.0 X DIL

COMPOUND	SPIKE ADDED	BLANK CONC	BS CONC	BS %	QC LIMITS	CLP LIMIT	
NAME	(ug/L)	(ug/L)	(ug/L)	REC #	REC.	SPIKE	X RPD
=======================================	=======	=======	=======	=======	=======================================	=======================================	=====
PHENOL	100.00	0	39.74	40	14 - 99	12 - 110	42
2-CHLOROPHENOL	100.00	0	90.61	91	19 - 107	27 - 123	40
1,4-DICHLOROBENZENE	50.00	0	42.11	84	18 - 101	36 - 97	28
N-NITROSODI-N-PROPYLAMINE	50.00	0	52.38	105	32 - 108	41 - 116	38
1,2,4-TRICHLOROBENZENE	50.00	0	39.43	79	24 - 99	39 - 98	28
4-CHLORO-3-METHYLPHENOL	100.00	0	94.18	94	31 - 111	23 - 97	42
ACENAPHTHENE	50.00	0	51.81	104	33 - 110	46 - 118	31
4-NITROPHENOL	100.00	0	32.88	33	1 - 141	10 - 80	50
2,4-DINITROTOLUENE	50.00	0	47.10	94	35 - 106	24 - 96	38
PENTACHLOROPHENOL	100.00	0	88.54	89	1 - 147	9 - 103	50
PYRENE	50.00	. 0	58.79	118	42 - 119 1	26 - 127	51

[#] Column to be used to flag recovery and RPD values with an asterisk.

Spike Recovery: 0 out of 22 outside limits.

SURROGATE RECOVERIES	FG246BS	FG246BLK	LIMITS	
D5-NITROBENZENE	92	80	35 -	114
2-FLUOROBIPHENYL	83	75	43 -	116
D14-P-TERPHENYL	108	103	33 -	141
D5-PHENOL	40	32	10 -	94
2-FLUOROPHENOL	63	58	21 -	100
2,4,6-TRIBROMOPHENOL	103	82	10 -	123
1		_11_		

FORM III SV-1

^{*} Values outside of QC limits.

Lab Name: ITAS - Austin QC BATCH ID

 Sample Names:
 FG24604
 FG24605
 Prep Code/Date:
 3520
 | 1/5/94

 Date Ran:
 1/2/94
 1/2/94
 Test Code/Date:
 8270
 | 1/5/94

 Time Ran:
 17.20
 17.56
 Set #: * Inst.ID: F

Matrix Spike - SAM Sample No. B3122460 Matrix: WATER

(450 ML TO 1 ML) 1.0 X DIL

	SPIKE	SAMPLE	MS	MS	QC
COMPOUND	ADDED	CONC	CONC	1 %	LIMITS
NAME	(ug/L)	(ug/L)	(ug/L)	REC #	REC.
=======================================	=======	=======			
PHENOL	222.22	.00	85.11	38	26 - 90
2-CHLOROPHENOL	222.22	.00	203.91	92	25 - 102
1,4-DICHLOROBENZENE	111.11	.00	94.07	85	28 - 104
N-NITROSODI-N-PROPYLAMINE_	111.11	.00	114.47	103	41 - 126
1,2,4-TRICHLOROBENZENE	111.11	.00	88.78	80	38 - 107
4-CHLORO-3-METHYLPHENOL	222.22	.00	208.47	94	26 - 103
ACENAPHTHENE	111.11	.00	113.09	102	31 - 137
4-NITROPHENOL	222.22	.00	79.96	36	11 - 114
2,4-DINITROTOLUENE	111.11	.00	104.40	94 * 1	28 - 89
PENTACHLOROPHENOL	222.22	.00	199.69	90	17 - 109
PYRENE	111.11	.00	137.11	i 123 i	35 - 142
	i İ	i	•	i i	

1	SPIKE	MSD	MSD			
COMPOUND	ADDED	CONC.	%	×	QC	LIMITS
NAME	(Ug/L)	(ug/L)	REC #	RPD #	RPD	REC.
=======================================	=======	=======	========	=======	======	=======================================
PHENOL	222.22	87.69	39	3	35	26 - 90
2-CHLOROPHENOL	222.22	199.04	90	2	50	25 - 102
1,4-DICHLOROBENZENE	111.11	101.18	91	7	27	28 - 104
N-NITROSODI-N-PROPYLAMINE_	111.11	112.40	101	2	38	41 - 126
1,2,4-TRICHLOROBENZENE	111.11	93.47	84	5	23	38 - 107
4-CHLORO-3-METHYLPHENOL	222.22	215.93	97	4	33	26 - 103
ACENAPHTHENE	111.11	113.38	102	0	19	31 - 137
4-NITROPHENOL	222.22	82.49	37	3	50	11 - 114
2,4-DINITROTOLUENE	111.11	104.73	94 *	0	47	28 - 89
PENTACHLOROPHENOL	222.22	205.16	92	3	47	17 - 109
PYRENE	111.11	137.53	124	0	36	35 - 142
						i

[#] Column to be used to flag recovery and RPD values with an asterisk.

RPD: 0 out of 11 outside limits.

Spike Recovery: 2 out of 22 outside limits.

SURROGATE RECOVERIES	FG24604	FG24605	LIMITS	
D5-NITROBENZENE	97	97	35 -	114
2-FLUOROBIPHENYL	82	84	43 -	116
D14-P-TERPHENYL	113	114	33 -	141
D5-PHENOL	40	40	10 -	94
2-FLUOROPHENOL	58	j 61	j 21 -	100
2,4,6-TRIBROMOPHENOL	90	92	10 -	123
		_i		i

^{*} Values outside of QC limits.

QC BATCH ID FOR GFAA/CVAA - Test Code: 4.66	
PREPREP METHOD:	
PREP METHOD: 23020	
ANALYSIS METHOD: 7060	
BATCH DATE: 12-28-93	
INSTRUMENT ID: D	\neg
SET (BATCH) #: 2	\dashv

Lab	Sample ID's
1	B312245-08B
_ 2	B17246-02D
_ 3	-03D
4	B312266-12B
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Comments:

LCS ID:	LC520 122893-2
	LCSD20 122893-2
MB ID:	f320 r2893-2
MS ID:	B312246-04D
MSD ID:	1 -05D
REP ID:	V, -OJD DUF

Batch QC ID's

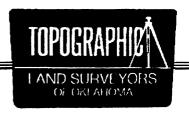
Batch QC Resul	115		MDL: <u>0</u>	<u>165</u> PQL: 0
Sample ID	Result	Units	Analyst	Date/Time
Method Blk	10.010		36-	1-7-94 W:33
LCS % Rec	701	% Rec		1
LCSD % Rec	99	% Rec		
LCS/LCSD RPD	7.8	% RPD		
MS % Rec	109	% Rec		
MSD % Rec	108	% Rec		
MS/MSD RPD	0.92	% RPD		
REP RPD	0	% RPD	1 1	

PREPREP METHOD: PREP METHOD: PREP METHOD: ANALYSIS METHOD: BATCH DATE. 19 16 / 3 INSTRUMENT ID: A SET (BATCH) #: 1 Work Orders/Fractions Associated With Batch Lad Sample ID's LCS ID: LCS 10 1893 - 1 LCS ID: LCS 10 1893 - 1 LCS ID: LCS 10 1893 - 1 MS ID: A) 1893 - 1 MS ID: B) 1893 - 1 MS ID: B) 1893 - 1 MS ID: B) 1893 - 1 MS ID: B) 19 24 4 DFC MSD ID: B3/004 6 DC REP ID: L CS 0 10 1893 - 1 Batch QC Results MDL: PQL: 0 D) Sample ID Result Units (Analyst (Date/Time) IMethod Blk D	-			
ANALYSIS METHOD: C	PREPRE	P METHOD:		
BATCH DATE.				
BATCH DATE.	ANALYSI	S METHOD: CR_VH		
NSTRUMENT ID:				-
Batch QC ID's	INST	RUMENT ID: A		
Batch QC ID's	SET	(BATCH) #:		
Batch QC ID's				
Batch QC ID's	Work Orders/Fractions	s Associated With Batch		
LCS ID: LCS 13 1893-1 LCS ID: LCS 13 1893-1 MB ID: AD \$1893-1 MS ID: \$3 13346 DHC MSD ID: \$23346 DHC MDL: \$23010 DHC MDL: \$23010 DHC MDL: \$23346 DHC MDL: \$2346 DHC MDL: \$2346 DHC MDL: \$2346 DHC MDL: \$2346 DHC MDL: \$2346 DHC MDL: \$2346 DHC MDL: \$2346 DHC MDL: \$2346 DHC MDL: \$24				
CSD ID: CSD 2 833- MB ID: N D 893- MS ID: R3/2246 74C MSD ID: R3/2246 74C REP ID: L 2 50 2 895- 10	1			
CSD ID: CSD 2 833- MB ID: N D 893- MS ID: R3/2246 PMC MSD ID: R3/2246 PMC REP ID: L & SD 2 893- Batch QC Results MDL: PQL: 0,001 PQL: 0,001	- B31224602C	LCS ID: LCS 121893-1		
MB ID: N		LCSD ID: / CS D /2/843/		
Batch QC Results MDL: PQL:	3	MBID: NN D1853-1		
Batch QC Results MDL: PQL:	4	MS ID: B3 12246 140		
Batch QC Results MDL: PQL:	5	MSD ID: B3/2246-D50		
Batch QC Results				
Sample ID Result Units Analyst Date/Time				,
Sample ID Result Units Analyst Date/Time		Batch QC Results	MDL:	_ PQL: <u>(),()</u> /
Method Bik				
LCS % Rec			Analyst Da	te/Time
12			540 13	1809:001
LCS/LCSD RPD: 0 9,03 % RPD MS % Rec		-////		
15 16 18 18 19 10 11 11 11 11 11 11 11 11		LCSD % Rec 98,00.0 1% Rec		
MSD % Rec DOY 1% Rec MS/MSD RPD 18 REP RPD 2.02 1% RPD 19 20				
17 MS/MSD RPD				
18 REP RPD 2.02 1% RPD 19		,00/3		
19 20				
20		REP RPD 2.02 1% RPD	<u> </u>	V
Comments:	<u> </u>			
Comments.	Comments:			
	COMMENTS.		· · · · · · · · · · · · · · · · · · ·	

CC BATCH ID FOR WET CHEM - Test Code. AP-JE

APPENDIX D SITE SURVEY REPORT

Phone: (405) 843-4847 WATS: (800) 854-3219 FAX: (406) 843-0975



Surveying and Mapping for Oklahoma's Energy Industry

6709 N. Classen Blvd.

Oklahoma City, Oklahoma 73116

International Technology Corporation

Attn.: Joe Pacelli 312 Directors Drive Knoxville, Tn 37923

Reference: IT Subcontract No. 547295

IDO-5001 Bid 93116

(Survey Contract)

4.4 Documentation of Surveying Activities

Survey Contractor:

Topographic Land Surveyors of Oklahoma 6709 N. Classen Blvd. Oklahoma City, Oklahoma 73116 Edward D. (Deral) Paulk, PLS President Harry McClintick, PLS Party Chief (405) 843-4847

Instrumentation:

Work done was completed with a Topcon/Sokkisha Model C3E. Last calibration by the factory was done 10/10/1993 and was checked daily by standard survey methods to determine that the tolerance was within factory limits. The unique serial number for the instrument is # 153047. The data collector was a Hewlett-Packard 48SX using the TDS Survey card.

Methods:

Standard mil-spec survey methods were employed during the survey and included.

Double sets of repetitive angles, both in horizontal and vertical.

Distance in Meters and Feet for double redundancy.

Control Points:

All control points used were set by the Corps of Engineers and the coordinates were supplied to us in NAD-83 Meters, Oklahoma North Zone (3501) based upon the Lambert projection. Typical numbers were;

BM SE (secondary control points)

BM PR (Primary control points)

These points were established by Trimble 4000SE GPS receivers and are capable of obtaining accuracy in the centimeter range. During our survey we confirmed this accuracy and due to the nature of GPS usage, we did not balance our traverse of the monumentation. See explanation beginning on page three, this document.

Tabulation of Vertical and Horizontal Coordinates:

In sheet form broken into per site information in three formats.

NAD-83 Meters

NAD-27 Feet

NAD-83 Feet

Field Notes, Calculations and Reduction Techniques:

All field work was performed using Total Station and no reduction was necessary. Grid and Sea level factors used in the calculations are attached as part of this report. No paper field notes were kept, except diagrams explaining shot points. These are included as drawings and are part of the digital information supplied.

Actual closure of each particular site is disclosed within this document beginning on page 4.

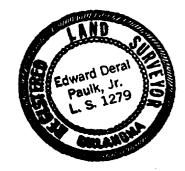
This survey is true and accurate based upon monumentation supplied by Tinker Air Force Base.

Edward D. Paulk, PLS #12/9

Topographic Land Surveyors of Oklahoma

6709 N. Classen Blvd.

Oklahoma City, Oklahoma 73116



USAGE OF GPS MONUMENTATION

Qualifications:

We are a Trimble Navigation dealer for the Midwest and have had crews surveying using GPS for over two years. Edward D. Paulk, has attended training and seminars continually to maintain a level of experience and technical knowledge of GPS that exceeds specs of GPS surveys.

During the course of our preliminary survey, we had closures that exceeded specs and we were forced to continue surveys back to our point of beginning to check our accuracy. We continually proved our surveys by closures exceeding 1 in 10,000, but we could not achieve this using the provided GPS monumentation and closing on a third monument.

We contacted the base mapping department and learned that the monuments were set using 4000SE receivers (GPS) by the Corps of Engineers. The 4000SE is capable of accuracy on any point of +/- 1-3 Centimeters. After this determination, we were well within specs of their given coordinates.

Their survey closure was probably quite good given the distances that they monumented, however when you use relatively close monuments as our survey dictated and very few traverse points, the error looks poor. Had we shot a mile away, then back to add some footage to our survey, the closure would have been much better. Since this technique is only used to comply with a pure mathematical closure, not a better survey, and would not actually improve positional accuracy, we did not do this.

Site by Site Report

File HM-A
HCL Tank
4 Soil Borings
IT Drawing #409832 Fig. 5.5
Horizontal and Vertical Control was establish for (4) four Soil Borings.
BM SE-33, SE-05 and PR-07 were used for control.

Upon first completion of traverse, we closed on PR-07 with 3.041' of error, but our vertical was with 0.05'. We made a closure back to SE-05 and closed within 0.4'. This site had the only apparent large discrepancy in their control. Since SE-33 and SE-05 agreed within limits we used these to determine closure.

Horizontal Accuracy 1 in 10,000 Vertical Accuracy 1 in 95,800

File HM-B
SPILL POND

2 Soil Borings

IT Drawing #409832 Fig. 5.6

Horizontal and Vertical Control was establish for (2) Soil Borings.

BM SE-33, SE-37 and SE-42 were used for control.

Horizontal Accuracy 1 in 5902 Vertical Accuracy 1 in 12,000

We closed back upon our first monument horizontally 1 in 25,000 as a check.

File HM-C

Sludge Drying Beds and Old Pesticide Area

13 Soil Borings 6 Monitor Wells

7 SG Points

IT Drawing # 409832 Fig. 5.3 and 5.7

Horizontal and Vertical Control was established for (13) Soil Borings, (6) Six Monitor wells and (7) SG Points.

BM SE-41, SE-45 and SE-47 were used for control.

Horizontal Accuracy 1 in 8725 Vertical Accuracy 1 in 390,000

We closed back upon BM SE-45 as a check and closed 1 in 14,000 Horizontally.

FileHM-D

Fuel Truck

- (8) Soil Borings
- (3) Monitor Wells
- (3) SG Points

IT Drawing #409832 Fig. 5.4

Horizontal and Vertical Control was established for (8) Soil Borings, (3) Monitor wells and (3) SG Points.

BM PR-02, SE-16 and PR-03 were used for control.

Horizontal Accuracy 1 in 22,586 Vertical Accuracy 1 in 20,000

File HM-E

Ordnance Disposal Area

(5) Soil Borings

(4) Corners of area as per staked and Dan McGregor's instructions.

IT Drawing #409832 Fig. 5.1

Horizontal and Vertical Control was established for (5) Soil Borings, (4) Corners of area. BM SE-19, PR-02 and SE-016 were used for control.

Horizontal Accuracy 1 in 10,000 Vertical Accuracy 1 in 20,000

File HM-F

Fire Training Area 2

(8) Monitor Wells

1T Drawing #409832 Fig. 5.8

Horizontal and Vertical Control was established for (8) Monitor Wells.

BM SE-37, SE-33 and BM32 were used for control.

Horizontal Accuracy 1 in 34,800 Vertical Accuracy 1 in 95,000

File HM-G

AFFF Fire Control Pond

(4) Soil Borings

IT Drawing #409832 Fig. 5.2

Horizontal and Vertical Control was established for (4) Soil Borings.

BM SE-31, SE-22 and PR-01 were used for control.

Horizontal Accuracy 1 in 6500 Vertical Accuracy 1 in 58,000

Shots Typical

Soil Borings-

One X,Y,Z placed center of drill hole, typically on top of concrete fill-in area.

(36) Total Soil Borings

Monitor Well-

(Flush mount) Three X,Y,Z,s were placed upon each well.

1: NW Corner of concrete pad.

2: Top of retaining casing, where well number was stamped into a milled area.

3: Top of well, under seal, (X,Y determined for center, and Z determined at north lip of well.

(Tower Mount) Three X,Y,Z,s were placed upon each well.

1: NW Corner of concrete pad.

2: Top of square guard, center

3: Screw cap removed, X and Y in Center and Z on the North lip of well.

(17) Total Monitoring wells. 51 points.

In addition, we determined X,Y and Z for a number of SG points. These were determined at center of dig point.

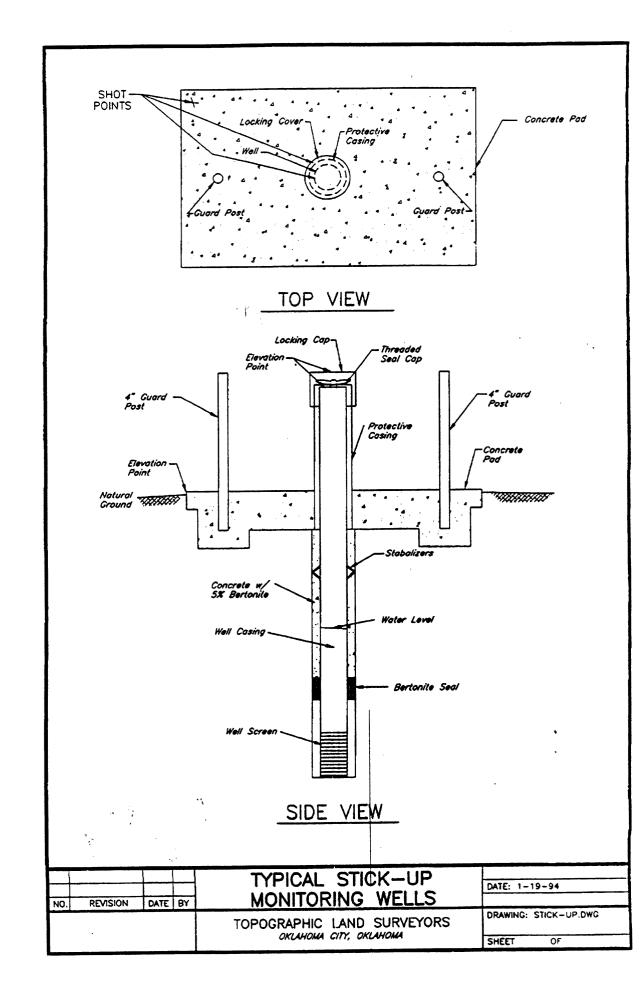
In addition; we determined X,Y and Z for four corners of an area in the Ordnance Disposal area as per Dan McGregor's instructions. These points were stakes set by previous contractor.

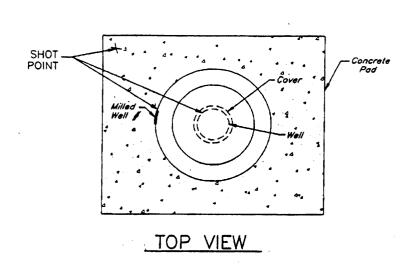
Included in this report are two drawings showing typical well layouts.

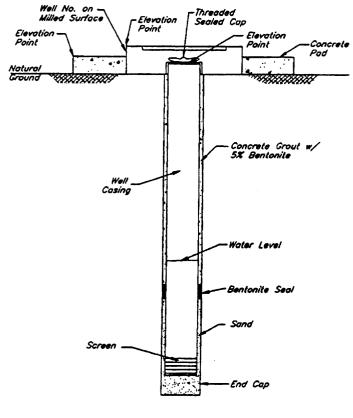
Drawing

Flush.Dwg

Tower.Dwg







SIDE VIEW

NO. REVISION	DATE	BY	TYPICAL FLUSH MOUNT MONITORING WELLS	DATE: 1-18-94
•			TOPOGRAPHIC LAND SURVEYORS OKLAHOMA CITY, OKLAHOMA	DRAWING: FLUSH.DWG SHEET OF

Tinker AFB	Factors	
	Factors.bd	
Calculations for Grid Distance		<u></u>
ormula Used 1-(1250)/(20,906,000)	0.9999402086	Elevation Factor
Elevation average is 1250		
Grid Factor from USGS Tables		
Average Latitude is 35-25	1.0000306000	Grid Factor
Combination Factor is multiple of these	0.9999708067	Combo Factor
		·····

Diskette Files

Disk Labeled IDO-5001

#547295

Text Files and Final Reports

FILE NAME

DESCRIPTION

Report.WPS Microsoft Works file of final report

Report.TXT ASCII file of final report.

Finals. WB1 Quattro Pro for Windows data base

All areas, control and Factors

NAD-83, NAD-27

Finals, WK3 1-2-3 V.3.x database

All areas, control and Factors

Hcl.TXT ASCII of HCL Area Spill.TXT ASCII of Spill Pond

Sludge TXT ASCII of Sludge and Pesticide

Fuel.TXT ASCII of Fuel Truck
Ordance.TXT ASCII of Ordnance area
Fire.TXT ASCII of Fire Training
FireC.TXT ASCII of Fire Control

NAD83.TXT ASCII of X,Y,Z and Description NAD27.TXT ASCII of X,Y,Z and Description

Control TXT ASCII of X,Y,Z and Description of control monuments.

Factor TXT ASCII of grid/elevation factors used in calculations.

State Plane Lambert Coordinate System	rdinata System	Ö	Conversion used was	The same of the same					
Oldahoma North Zone	******		Meters X 3.280833337						
Values in Feet				e e e			0.	Nad 1927	
Control Coordinates from GPS	Sd	-				Section of the sectio			
	88	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1		Meters				Feet	
	Marker			Northing	Easting	The state of the s	44	Northing	Easting
Fire Training Conter	SE24	Ì	E . C	45950.816	655952.839	No. of the last of		150730,584	2183669.404
	SE28	Š	12.05	45604.798	655531.584		773 000057	149595.353	2182287.332
	SE32	Š	X 0 1 1	45431.969	655045.990		Assess 721	149028.353	2180694.179
	SE43		27.15 K.78	46303.717	654817.311		27 9 27 C 200 10 T	151888.413	2179943.944
	L								
Bidg 1050 Spall Pond		27.552 1,20 00	8 8	45788.902	654625.746			150199.400	2179315.440
		374.686	£ 12323	46296.627	654526.676		2.3	151865.163	2178990.423
*arx			_						
BIOG 978-AFF	SE22			44861.607	655589.130		2650 70.073	147157.075	2182476.110
***	SE31			44877.485	654833.045			147208 198	2178985.530
	PR01	×		44381.814	655603.420	会会(権) 大学 ステー	2.2	145582 956	2182522.978
•									
Sludge Dropp Backs	SE45		10.00	46693.176	654086.696		2000000	153166 188	2177546.973
*	SE47			47117.173			224 ESECT. 2013	154557,245	2177426.496
	SE41			46360.622	653942.053		20.7/257/25	152075-1-22	2177072.383
+Ct. Tank	SE05		Take:	46999.293	656307.763			1541/8415	2164833.8/0
7.	SE08		77.6	46012.200			TATAL PROPERTY.	150931.017	2186473.977
	PR07		5,821	47640.475	656374.729		7. C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C.C	156274.017	2185053.591
	-					8	- 8		303 070070
Ordinance Disposal	SE16	35.676		44935.219			220		2180810.505
	PR02:		(S) (S) (S)	44519.766	_	CA K	77%	146035.506	2186309 369
	SE15	34.84	27.73	44874.549	656322.201		S 1525512	147199.504	2184861.167
_\						(Capple on the control of the capple of the			0405070 400
Fuel Truck Main	SE10			45484.255			656655.015 km. A to the control of	148154	2103973.103
	PR03	D8.291.1.30.73	22.23	45229.480			Z155686.011	148383 948	718/133 241
	-							1000	2404022 480
Others	SE03	Ę	22.23	47481.646				133/3/2010	2104032.403
	SE19	2	287.80	44134.062	İ	×.		144770004	2100304.242
	SE33	381.161	(200.37	45572.014			TOS PERSONAL PROPERTY.	149487 524	2180041.702
	SE38	384.547.3,260.66	88088	45560.105			2 1000	149448 783	21//182.890
	S. C. C. C. C. C. C. C. C. C. C. C. C. C.	. T. C. S. S. S.		45726 54R	654009317				040.007/12

	1-(1250)/(20,806,000)	0.999402088	Elevation Factor
	(0000'906'0	0.999402088	Elevation Factor
	(000'906'0	0.9998407088	Elevation Factor
	(000'906'0	ONTO A SECTION OF THE	
Davelor in 1280			•
Code Encloy from USGS Labors			
		4 0000308000	Grid Factor
		CONTRACTOR I	
Averge Later to work			
		0.9999708067	Combo Factor
Combination Factor is multiple of these			

				-			
_							41
Elevation	_	Northing		Easting Elevation	Northing		Easting Elevation
153284 190 2153838 084 1275 110	- 01	46721.114	656.429.578	388.654	153257.757	53257.757 2,185,233.520	1275.110
494 1275.92	80	46890.088	ı	388.919	153812.059	153812.059 2,185,218.954	1275.980
2153620.517 1276.230	8	46985.016	656,424.839		154123.573	2,185,217.979	1 !
2153604.478 1275.830	30	47075.075			154419.041	154419.041 2,185,201.941	1275.830
-		Conversion Factor			NAD-27 Derived with		
		Meters X 3.28083337			Corpscon Program		
					_		
	-	3.28083337					
_							
_							
				_			_

ЕВОМ ТОРОБЯРРИІС СОМРРИІЕS

Topographic HM-B File	1	Spill Pond							
	NAD-83 Feet			NAD-83 Moleca			NAD-Z7	*1.	
Description Northing	Northing	Easting	Elevation	Northing	Easting	Elevation	Northing		Easting Elevation
\$8-019	150763.571	50763.571 2148028.472	1227 435	45952.828	654,720.380	374.123	150737.212	150737.212 2,179,625.925	1227.435
SB-020	150782.180	50782.180 2148011.904		45958.500		373.747	150755.821	150755.821 2,179,609.357	1226.202
				Conversion Factor			NAD-27 Derived with		
			-	Meters X 3.28083337			Corpscon Program		
				3.28083337					
									- 1

Topographic	HMC	Sludge and Pesticide	ticide	Conversion	3.60000		No.		
and a Road	NAM 93 Eggs			NAD 63 Helera					acito, sol
	3	Faction	Section Services	Northing	Easting	Elevation	Northing	Easting	Elevation
Description	Nonmera							97 7 700	000 900
			000	18729 667	654006.782	373.969	153285.911	007/17	090 300
SB-029	153312.251	2145687.276 1220.928	16.00 948	010 0101	RS4005 748	373.673	153320.501	2177281.305	1223.800
SB-030	153346.842		1225.800	10/10/10/10/10/10/10/10/10/10/10/10/10/1	AK 4005 870	373 730	153338.949	2177281.766	1226.145
SB.031	153365,289		1226 145	40/40.055	0100000	272 803	153340,504	2177302.376	1226.028
SD 033	153366 845	2145704.893 1226.026	1226.026	46/46.30/	024012.132	975 748	153243 640	2177322.855	1226.205
7000	C80 08004	1	1226 205	46747.283		2/2/40	2007	2177748 133	1225 884
SHUSS	133303.906		1225 884	46746.485	654026.099	373.650	1000	24-1000	1227 087
SB-034	153367.428	_	100.000	46724 316		374.291	153301.164	21/1200344	30.00
NWCorPad	153327.504		122/.98/	707.00	1	374 372	153299.307	2177259.879	1228 252
Brass Tao	153325.646	_	1228.252	40155.130		974 259	153299.317	2177260.427	1227.880
ANAM STA	153325 856	3 2145882.944 1227.880	1227.880	46/33/53		1	452208 454	L	1227.942
W4-017	462334 702	-	1227 942	46736.538		_1	4 E 2 2 C 2 A B	L	1228 136
NWCOLFEG	133334.184	1	1228 138	46735.865	_		133300.240	1	1227 749
BrassTag	153352.500		1222 740	46736.025	653999.218	لــــــــــــــــــــــــــــــــــــــ	123300.771		4707 075
MW2-67B	153333.109	1	2001	183 4CTAL	653998.924	374.257	153267.920		1077
SG-021	153294.259		1221.0/3	10100000		374 128	153478.575		122/450
2000	153504 913	3	1227.450	46/06.391		L	142458 818	2177266.025	1227.773
0-021	163785 158	1 00	1227.773	46782.369		1	450 AED 456 954	L	1227,992
NWCorrad	133403.13	1	1227 002	46781.608			133430.321	- -	1
BrassTag	153462.001	-	1227 630	46781.808	854001.618	374.185	123426.977	1	L
MW2-68A	153483.317	_	1227.033	16786 384		374.215	153471.990		_
NWCorPad	153498.329			46788 084		374.234	153471.006		
BrassTao	153497.345		- 1	20.00104		L	153470.445		
MW2-68B	153496.783		_;	40/03.91.		L	153486.704		
CD 036	153513 04	2145686.160		46/90.869		1	152/35 613	3 2177169.986	1226.184
200	157461 953		1 1226.184	46775.296		.	452277 514	L	1227.352
5 6	153403 851	-	1 1227 352	46757.587		[163454 841	1_	L
26-043	152478 151	ļ.	9 1227 388	46780.233			10,10,10,1	L	Ľ.
SG-043	1334/0.13	1		46767.542			133410.17	_	1
SB-039	10.0000			46763.206	6 653973.046		153395.840]	١.
SB-040	153422.28	1	1.	46793 080	0 654013.431	1 373.505	153493.958		Ľ
SB-036	153520.297		004:0771 8	10794	_	9 373.631	153489.509		4
SB-037	153515.84			46704 690	j.		153489.394	_	_
SB-038	153515.73	1	. 1	00.18/04	_	l.	153561.649		_
89-030	153587.96	39 2145651 621	- 1	46613.712		1_	153535.004	2177378.089	
SC 034	153561 34	46 2145780.604	4. 1228.528	46805.591		L	153503 281	717378.177	7 1228.755
00.00	153529 62	1	2 1228.755	46795.922			452477 A79	L	8 1228.566
00-000	153603 83	1	5 1228 566	46788.058		1	2017 177 180	1.	L_
NWCorrad	100000		1	46787.357	_		133473.16	.].	1_
BrassTag	193901.9		1	46787.452		. !	1934/5.481		
MW2-66B	153501.8		1		56 654069.377	7 374.435	153486.331		
NWCorPad	153512.675		1				153485.081		70000
BrassT80	153511.4.		0000000		_	13 374.359	153484.356	56 217/491 /82	97
400	OL 012021		2145894 300 1226,208						

2155282.108 1295.444						
Eseting 5282.108		1	0017777	Modhio		Easting Elevation
5282.108	Northing	Easting	ENDVARION			
5282.108	300 01031	658034 203	304 852	148749.089	2186879.522 1295.444	1295.444
Ì	45340.003		205 835	148747 163	2186881.208 1298.011	1298.011
2155283.795 1298.011	45,340,204	1	205 564	148747 160	2186881.244 1297.780	1297.780
	45346.283	\perp		148654.478	2186731.015 1295.503	1295.503
2155133.601 1285.503		620000.UC0		148652 926	2186732.695	1297.910
	45317.500			148652.962	2186732.714 1297.669	1297.669
		١	394 292	148658.094	2186678.134 1293.608	1293.606
2155080.720 1293.606	43318.133		394 533	148657.198	2186767.383	1294.398
	1	\perp		148682.056	2186750.834 1295.649	1295.649
5153.422	,	6.EE000 443		148688.959	2186731.291	1295.280
	45328.543			148718.136	2186723.049 1295.337	1295.337
			104 R55	148744.402	2186718.650 1295.452	1295.452
2155121.237 1295.452			304 012	148747.128	2186749.887	
`			304 820	148765.875	2186766.271	1295.340
2155168.857 1285.340	108.1000	\perp		148763.832	2186704.005 1295.427	1295.427
				148740.941	2186693.033 1285.804	1295.804
5085.618				148681.693		
				148718.373		1295.791
5092.856				148717.506		1295.890
155093.661 1295.890	1			148716 883	2186691.012 1295.587	1295.587
155093.599 1285.587	45337.048	8 6568/3.835	234.000			
Conversion 3.28083337						
Factor			†			

- Constant	-								
Topographic HM.F File	ł	Ordnance				_			
	13		-	N. C. S. S. S. S. S. S. S. S. S. S. S. S. S.					
NAD-83 reer	5		11	Northing		Easting Elevation	Northing		Easting Elevation
Description Northing		Easting	Elevation	ALL COLORS					
				133 96977	ACCACT 1777	300 A12	146418.665	L	1311.061
SB-014 146445.086	5.086	2154383 435		4600.33		200 241	148388 R51	1 2185952.828 1310.171	3 1310.171
SB-013 146413.073	3.073	2154355.429	1310 171	44020 /83			171 171	L	3 1310 433
SP-011 14844	7.893	2154329.998	1310 433	104 / 104		- 1	21013030		1210 47
CD 042 446465 811	5 811	2154321 959	1310 473	44642 868		- 1	140408 CB		4544
30-01	0.00	2464242 840		44666 173	3 658645 299	399 691	148515.850		1311.310
SB-010 14034	1177	2134343.012	1	44720777	656638 810	399.232	146694.980		1 1309.813
NWCorSite 146721.400	8	2134325.320	C10 80C1	677 66377		L	146424,969	9 2185785,474 1308,511	4 1308.511
SWCorSite 146451.388	388	2154188.076		10000		1	148779 439	L	1 1308.42
CECOCHA 146305 859	5 859	2154478.943	1308.422	44594,115		1		I	120g 20'
NECocke 146573 205	3 205		1306.203	44675.602	2 656727.004	398.131	140340./01	11 2100203.200 1300.203	1300.40
NECOSOR 1400	-		_					-	-
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	נ	CONCENSION	2.50000						_
	u.	Factor	-			-			
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Mathematical Residence Monthling Elevation Monthling Elevation Monthling Elevation Monthling Elevation Monthling Elevation Ele	Topographic		Fire Training		**************************************			27-CIM		
150409-212 2150062.314 1246.117 45872.251 6555431.377 370.857 150472.826 2181959.759 150409.222 2181959.759 150409.222 2181959.759 150409.223 1246.033 45871.425 6555431.617 370.875 150407.223 1246.0323 2181959.355 150409.232 1246.033 45871.425 6555431.617 370.875 150407.202 150407.202 150409.378 1246.032		NAD-83 Feet			The second secon		Elevation	Northing		Elevation
150406-212 2150062-234 1246-117 45872-255 655431-470 376-871 150470-202 2181656-866 150406-710 150407-202 2181656-866 150406-710 150407-202 2181656-866 150406-710 150407-202 2181656-866 150406-710 150407-202 2181656-866 150406-710 1245-710				Benetice	Northing	Samo	5			
150490.212 2150082.314 1246.134 45877.251 656431.410 378.882 150470.252 2161656.866 150460.203 1246.0524	and the same					202 101	270 047	150477 878	L.	1246.117
50496 716 2150361 243 1246 334 45871 426 655431 617 379 787 154470 205 218 1950 205 154696 362 1246 022 1246 0		1	L		45872.251	655431.737		130414.040		1248 33
50466 510 2190001 429 1246 022 45871 452 655431 817 319 775 150470 205 2181987 840 150460 205 2181987 840 150460 205 2181987 840 150460 205 2181987 840 150460 205 2181987 840 150460 205 2181987 840 150460 205 2181987 840 150460 205 2181987 840 150460 205 2181987 840 150460 205 2181987 840 150460 205 2181987 840 150460 205 2181987 840 150460 205 2181987 840 120460 205 2181987 740 120460 205 1	WCorpa		L		45871.488	655431.410		1304/0.323		, 30 00 V
150486 582 2160501 870 1245 784 45871.387 65543.221 378 750 150467.642 2181987.941 1150486 0.08 2150503 786 1245 784 45871.387 65543.415 378 655 150467.403 2181097.200 150480.782 2150392 786 1245 886 45871.587 65543.415 378 655 150467.403 2181097.200 150493.781 1245.586 45871.581 65543.415 150480.782 150435.844 1245.881 65543.415 150480.891 150486.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 1245.890 45847.192 655457.115 378 655 150480.891 150480.891 150480.891 1245.890 45847.192 655457.115 378 885 150480.891 1245.890 1243.397 45845.891 150480.891 150480.891 150480.891 150480.891 1245.890 45845.815 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 150480.891 1245.890 45845.815 150480.891 150440.891 150480.891 150556.891	Brassta ₍		_1		45871 452		379.797	150470.205		CO.0471
150466 378 2150310.487 1245.148 45870.598 45870.598 45870.598 15045.408 15045.408 15045.408 15045.887 15046.082 15045.408 15045.887 15046.082 15045.488 15045.887 15046.082 15045.887 15046.082 15045.887 15046.082 15045.887 15046.082 15045.887 15046.082 15045.884 1243.381 124	MW2-64/				15074 207	L		150469.991	2181967.941	1245.74
150494 048 2180389 766 1245 897 45870.598 655454 175 378.855 150467 403 2181967 757 1180487.389 1245 588 45846.207 655454 175 378.855 150467 403 2181033.281 1180487.381 1245 588 45845.865 655454 159 378.954 150386.113 218203.281 1180417.381 1243.381 1243.284 1243.381 1244.284 1243.387 1243.824	WCorba		L		10011.004			150467,662	2181967.209	1245.89
150463.787 2150370.314 1245.586	Proce Tay	L	L		458/0.6/			150467 403		1245.58
150413 765 2150435 846 1243 381 45845 865 655454 130 378 038 150386 585 2182034 889 150413 765 2150437 446 1243 284 45845 821 655454 130 378 038 150386 113 2182043 528 150412 971 2150437 314 2143 284 45845 821 655456 444 318 059 150380 1033 2182040 517 124415 608 1243 284 45845 821 655456 115 378 385 150380 1033 2182040 517 124415 608 1243 780 45845 821 655456 110 378 385 150380 103 2182043 052 150416 357 12445 608 1243 780 45845 821 655456 110 378 385 150444 701 2182043 052 126445 608 1244 284 245 284	INAM AAE		L		458/0.5%	1		150387 380	Ì.,	1243.361
150412.971 2150437.446 1243.561 45845.829 655454.739 655454.739 655454.739 655454.739 120386.113 2182035.358 1 150412.486 2150437.319 45847.339 655454.7125 378.954 150380.611 2182040.817 1 150412.486 2150445.608 1243.780 45847.339 655457.125 379.108 150380.611 2182043.052 1 150416.351 2150446.608 1243.780 45847.339 655457.115 379.885 150444.701 2182043.019 1 150416.371 2150446.506 1243.780 45846.032 655486.415 379.885 150444.701 2182043.019 1 150476.876 1250446.57 1246.286 655486.465 379.886 150444.701 2182043.019 1 150476.876 125044.286 45865.626 445.886.62 45865.62 445.886 150444.701 2182140.528 182144.701 2182140.538 182144.701 2182140.538 182144.701 2182140.500 182144.701 2182140.500 182144.701	A DOOR	Ĺ	L		45846.207			150386 585	L	1243.561
150412 498 2150437 814 1243 284 45847 339 055456 444 379 059 150391 093 2182040 817 150412 498 2150443 373 1243 830 45847 339 655456 115 379 106 150390 611 2182043 052 1 150416 599 2150445 576 1243 387 4584 032 655466 11 378 389 150444 701 2182139 17 1 15047 247 215 150540 674 1246 252 4584 032 655486 445 379 38 150444 701 2182139 902 1 15047 247 215 0540 674 1246 286 4584 032 655486 445 379 38 150444 701 2182139 902 1 15047 247 2150540 674 1246 286 4584 032 655486 445 379 38 150444 701 2182139 902 1 15047 247 21505540 674 1246 249 4584 645 655480 188 379 24 150444 517 2182130 03 1 15047 241 21505540 145 1245 404 4584 641 655490 188 379 24 150444 701 2182140 56 150444 701 21	PASSTA		L		45845.905			150386.113	L	1243.284
150417.479 2150443.373 1243.629 45847.338 055457.115 379.108 150390.611 2182043.052 1150416.899 2150445.608 1243.387 45846.992 655457.115 378.985 150448.899 2182043.019 1150416.899 2150446.875 1240.387 45846.992 655486.815 379.893 150444.701 2182139.902 1150470.890 2150542.400 1246.284 45846.032 655486.845 379.893 150444.701 2182139.902 1150470.890 2150542.400 1246.284 45846.651 655489.782 379.896 150449.284 2182130.03 150473.214 1246.511	MAD AR	L	L		43643.621			150391 093		1243.630
150416 999 2150445 608 1243.780 45846 995 655486 101 378.985 150389.964 2182043.019 1 150416 351 2150446 576 1243.387 45846 995 655486 101 379.797 150445 859 2182138.117 1 150470 247 2150540.674 1246.052 45893.679 655486 101 379.797 15044.701 2182138.902 1 150470 906 2150542.460 1246.240 45893.679 655486.182 379.843 15044.717 2182150.03 1 150470 906 2150542.286 1246.408 45883.623 655486.132 379.843 15044.517 2182150.03 1 150474 251 2150554.084 1246.408 45846.651 655480.383 379.843 15044.880 2182150.03 1 150474 251 2150554.084 1246.531 45846.651 655480.383 379.843 150447.883 2182160.03 1 150724 601 2150550.014 45846.651 655490.383 381.342 150447.880 2182180.884 150724 676 </td <td>VCORPA</td> <td></td> <td></td> <td></td> <td>45847.338</td> <td></td> <td></td> <td>150390.611</td> <td>_</td> <td>1243.790</td>	VCORPA				45847.338			150390.611	_	1243.790
150416.351 2150445.576 1243.387	PASSTA		L		45646.192			150389.964	_	1243.38
150472.247 2150540.674 1246.052 45863.03 655406.445 379.863 150444.701 2182139.902 1 150472.247 2150540.674 1246.056 45863.679 655486.445 379.863 150444.701 2182139.902 1 150470.806 2150542.460 1246.206 45863.676 655480.722 379.806 150447.867 2182150.03 1 150470.807 215054.3115 1246.531 45864.643 655490.188 379.846 150447.863 2182150.03 1 15047.276 2150554.084 1246.531 45864.643 655490.188 379.846 150447.880 2182150.03 1 15047.276 2150554.084 1246.531 45846.651 655490.383 379.846 150447.880 2182150.03 1 150724.671 2150590.742 1250590.742 45840.897 655502.014 381.342 150447.880 2182180.554 1 150724.671 2150580.466 1250.897 45845.810 655502.014 381.388 150712.82 2182182.571	MAD A3	L	L	Ì	45646.983			150445,859	L	1246.05
150471.088 2150542.460 1246.286 45803.074	VCORPA		_		43604.032			150444,701		1246.266
150470.906 2150543.115 1245.940 45065.012 45065.012 450409.284 2182150.03 1 150476.671 2150552.586 1246.406 45864.643 655490.188 379.906 15047.863 2182150.03 1 150474.251 2150554.084 1246.531 45844.643 655490.383 379.943 150447.863 2182151.526 1 150474.276 2150554.084 1246.531 45846.651 655500.383 381.342 150447.890 2182152.166 1 150726.091 2150590.445 1251.270 45840.970 655502.074 381.388 150689.271 2182187.591 150724.616 2150583.419 1250.876 45840.970 655502.074 381.287 150890.271 2182182.824 150724.65 2150583.419 1250.876 45845.810 655499.650 381.388 150712.762 2182182.571 150739.263 2150583.419 1250.876 45845.810 655499.650 381.384 150712.762 2182182.571 150739.263 2150583.419 1250.881	PASSTA				43003.072			150444.517	L	1245.94
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150474 251 2150554 084 1246 531 45804 651 655490 383 378 846 150447 890 2182152 166 150474 276 2150554 721 1246 213 45804 651 655549 383 379 846 150447 890 2182152 166 150726 091 2150590 145 1251 120 45941 404 655501 074 381 342 150699 702 2182187 591 150726 091 2150590 145 1251 120 45940 971 655501 074 381 388 150699 278 2182180 524 150724 671 2150592 440 1250 976 45945 810 655499 130 381 287 150714 157 2182180 865 150739 181 2150585 126 1251 089 45945 419 655499 650 381 287 150712 875 2182183 201 150739 283 2150585 77 1250 812 45945 419 655499 650 381 248 150712 875 2182183 201 150739 283 2150585 77 1250 812 45945 419 655499 842 381 248 150712 875 2182183 201	ACCOUNT	L	L_		45003.07				_	1246.53
150/72.0 2150554.721 1246.213 4594.0 4594.180 381.342 150699.702 2182187.591 150726.091 2150550.145 1251.120 4594.0 970 65550.074 381.342 150699.702 2182187.591 150724.091 2150580.078 1251.270 4594.0 971 65550.180 381.286 150699.281 2182180.852 150724.074 2150583.419 1250.838 4594.5.810 655499.650 381.287 150712.792 2182180.865 150739.181 2150585.126 1250.838 4594.5.419 655499.842 381.248 150712.875 2182183.201 150739.283 1250885.75 1250.833 4594.5.419 655499.842 381.248 150712.875 2182183.201 150739.283 150739.676 328083337 4594.5.419 655499.842 381.248 150712.875 2182183.201	RASSTA	L			40004.04			150447.890		1246.21
150726.091 2150580.145 1251 120 43841.70 45940.971 45540.074 381.388 150680.278 2182180.524 150724.66 2150583.078 1251.270 45940.971 655502.074 381.286 150690.281 2182180.885 150724.671 2150582.440 1250.834 1250.834 45945.810 655499.130 381.287 150714.157 2182180.865 150739.181 2150583.75 1250.834 45945.810 655499.842 381.333 150712.792 2182182.571 150739.283 150739.286 1250.885.77 45945.419 655499.842 381.248 150712.875 2182183.201 150739.283.75 1250.885.77 1250.812 45945.419 655499.842 381.248 150712.875 2182183.201 150739.286 150730.875 1250.88337 45945.419 655499.842 381.248 150712.875 2182183.201	WWD-62				00.00004			150699.702	_	1251.12
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Conversion	WAP A		2150585.7					-	1	
	300			3.28083337		_				
			Factor							

Topographic	Topographic HMA-G File Fire Conft	Fire Control							
			-				-		
	NAD-83 Feet		 	NAC AS Makers					
Description Northing	Northing	Easting	Elevation	Northing	Easting	Easting Elevation	Northin	2 Easting	Elevation
SB 018	147211 123	2150886 702 1288 631	1288 631	44870.043	655.591.571	386.679	147184.75	147184.752 2,182,484.119	
2000	447032 432	1	1270 381	44815.574	655,592,495	387.207	147006.04	147006.049 2,182,487.149	1270.361
10-00	4 46000 078	1	1273 784	077 770	1	388 250	146783.590	146783,596 2,182,487,440	1273.784
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				Conversion Factor			NAD-27 Derived	2	
				Meters X 3 28083337			Corpscon Prog	ō	
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				3.28083337					
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Coordinates in NAD 2	7 (Feet)		
	· . X		
SB-045	153257.757		
8B-044	153812.059		1
58-042	154123.573		† - · — - · · · · · · · · ·
\$B-043	154419.041		1275.830
SB-019 SB-020	150737.212		1227.435
8B-029	150755,821 153285,911		
SB-030	153320.501	2177284.758 2177281 365	1226.929 1225.960
8B-031	153338.949	2177281.766	1226.145
SB-032	153340.504	2177302.376	1226.026
8B-033	153343.640	2177322.855	1226 205
8B-034	153341.088	2177348.133	1225.884
NWCorPad	153301.164	2177258.344	1227.987
BrassTag	153 <u>299.30</u> 7	2177259.879	1228.252
MW2-67A	153299.317	2177260.427	
NWCorPad BrassTag	153308.454	2177257.848	1227.942
MW2-67B	153306.246 153306.771	2177260.227 2177259.941	1228.136
8G-021	153267.920	2177258.977	1227.749 1227.875
8G-027	153478.575	2177253.637	1227.450
NWCorPad	153458.818	2177268.025	1227.773
BrassTag	153456.321	2177268.214	1227.992
MW2-68A	153456.977	2177267.817	1227.639
NWCorPad	153471.990	2177265.458	1227.737
BrassTag	153471.006	2177267.377	1227.801
MW2-68B	153470.445	2177267.505	1227.501
58-035 88-041	153486.704 153435.613	2177283.644	1225.832
8G-046	153377.514	2177169.986 2177145.766	1228.184 1227.352
\$G-043	153451.811	2177145.265	1227.388
8B-039	153410.174	2177198.420	1225.186
SB-040	153395.948	2177174.077	1225.367
8B-036	153493.958	2177306.573	1225.408
8B-037	153489.509	2177320.543	1225.822
88-038	153489.394	2177346.511	1225.397
SG-030_	153561.649	2177249.107	1228.246
8G-034 6G-035	153535.004	2177378.089	1228.528
NWCorPad	153503.281 153477.479	2177378.177 2177489.938	1228.755 1228.568
BrassTag	153475.180	2177492.330	1228.786
MW2-86B	153475.491	2177491.726	1228.424
NWCorPad	153486.331	2177490.122	1228.458
BrassTag	153485.081	2177491.772	1228.601
MW2-66A	153484.358	2177491.782	1228.209
NWCorPad	148749.069	2186879.522	1295.444
TopCap MW2-69	148747.163	2186881.208	1298.011
NWCorPad	148747.180 148654.478	2186881.244 2186731.015	1297.780 1295.503
TopCap	148652.926	2186732.695	1297.910
MW2-61	148652.962	2186732.714	1297.669
8G-011_	148658.094	2186878.134	1293.606
8G-007	148857.198	2186767.383	1294.398
8B-028	148682.056	2186750.834	1295.649
SB-026_	148688.959	2186731.291	1295.280
8B-025 8B-024	148718.136	2186723.049	1295.337
8B-023	148744.402 148747.128	2186718.650 2186749.887	1295.452
8G-003	148765.875	2186766.271	1295.640
8B-021	148763.832	2186704.005	1295.427
8B-022	148740.941	2186693.033	1295.804
8B-027	148681.693	2186692.623	1295.822
NWCorPad	148718.373	2186690.271	1295.791
Brassiag_	148717.508	2186691.074	1295.890
MW2-60	148716.863	2186691.012	1295.587
SB-014	146418.665	2185980.834	1311.061
88-013 88-011	146386.651	2185952.828	1310.171
8B-012	146421.474 146439.390	2185927.396 2185919.358	1310.433
38-010	148515.850	2185941.209	1311.318
NWCor8ite	146894.980	2185919.921	1309.813
8WCor8ite	146424.969	2185785.474	1308.511
8ECor8ite	146279.439	2186076.341	1308.422
NECorSite	146548.781	2186209.268	1306.203
NWCorPad	150472.826	2181959.759	1246.117

APPENDIX E GEOTECHNICAL, CERTIFICATES OF ANALYSIS, CHAIN OF CUSTODY



GEOTECHNICAL LABORATORY

409802

CERTIFICATE OF ANALYSIS

ROLLY: +0 CF, TL, KM 2/21/194

March 16, 1994

Karmen Deane IT Corporation 5307 Industrial Oaks Blvd. Suite 160 Austin, TX 78735

ETDC Project Number: 483500.094.04 P.O. Number: 4627-341

Job Number: 414627

This is the Certificate of Analysis for the following samples:

Client Project ID:

Number of Samples:

Tinker AFB

Date Received by Lab:

November 23, 29, & 30, 1993

Twelve (12)

Sample Type:

Soil

I. <u>Introduction/Case Narrative</u>

Twelve (12) soil samples were received by IT/ETDC for analyses of grain size distribution, cation exchange capacity, moisture content and permeability.

Please see Appendix A, the Sample Number Cross Reference List; Appendix B, the Analysis Results; Appendix C, the Chain of Custody and Request for Analysis Records and Appendix D, the Nonconformance/Variance report.

Reviewed and Approved:

Chanley Morgan

Project Manager, Geotechnical Services

Page 2 of 20 Karmen Deane IT Corporation March 16, 1994

Client Project ID: TINKER AFB ETDC Project No.: 483500.094.04

IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN (615) 482-6497

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II. Analytical Results/Methodology

REFERENCES: Annual Book of ASTM Standards, Section 4, Construction, Volume 04.08, Soil and Rock; Dimension Stone; Geosynthetics. Volume 4.02, Concrete and Aggregates.

Grain Size Distribution Cation Exchange Capacity Moisture Content Permeability ASTM D422 EPA, Method 9081 ASTM D 2216 ASTM D 5084

III. Quality Control

Except for cation exchange capacity analysis, quality control checks such as duplicates and spikes (QC samples), are not normally applicable to geotechnical testing. This is due to the inability of obtaining samples with known characteristics, the heterogenous nature of the samples, and Quality Control procedures built-in to the analytical method.

QC measures to ensure accuracy and precision of test results include the following:

- 100% verification on all numerical results all raw data entries, transcriptions and calculations entered by lab technicians are checked, recalculated and verified. Most data calculations are performed by computer programs.
- Data validation through test reasonableness summaries of all test results for individual reports are reviewed to determine the overall reasonableness of data and to determine the presence of any data that may be considered outliers.
- Quality control procedures are built into most standardized geotechnical procedures. For example, many analyses routinely call for a re-analysis, specifying an acceptance criteria.
- Routine instrument calibration all instruments, gauges and equipment used in testing are calibrated on a routine basis. All instrument calibration follows ASTM or manufacturer guidelines.
- Maintenance of all past calibration records records and certification documents of all instruments, gauges and equipment are updated routinely and maintained in the Quality Control Coordinators Quality/Operations files.

Page 3 of 20 Karmen Deane IT Corporation March 16, 1994 Client Project ID:

ETDC Project No.:

TINKER AFB 483500.094.04

IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN (615) 482-6497

Rowerd +0 (F 72, K+1)

• Use of trained personnel for conducting tests - all technicians are trained in the application of standard laboratory procedures for geotechnical analyses as well as the quality assurance measures implemented by IT.

IV. Data Qualification

Fine sieve and hydrometer results occasionally overlap due to organic debris, soluble salts or other contaminants contained in the sample. Data points are plotted as calculated. No attempt has been made to curve-fit the grainsize data points.

The cation exchange procedure included analysis of a blank, and duplicates. The blank value was found to be below the method detection limit of 0.05 mg/l for sodium analysis. The relative percent difference (RPD) for the duplicate samples were 2.8 and 26.8. The RPD for sample ETDC-4686 which was outside the limit is thought to be due to sample heterogeneity rather than analytical precision.

Moisture contents are calculated in accordance with ASTM D 2216. Given results are based on the sample dry weight, not on the sample wet weight as is common in analytical chemistry.

On RFA/COC No: 417423, a permeability analysis was requested for sample number B311314-02B. There was an insufficient sample amount to perform requested analysis. Sample was obtained from tube marked as duplicate B311314-02A to perform permeability analysis.

The constant-head permeability test is based on the quantity of water flowing through the soil specimen versus time under essentially equilibrium conditions. ASTM D 5084, paragraph 8.5.3, states that equilibrium conditions are indicated by four consecutive permeation results not varying by more than 25% of the average of the tests. Porous soils containing appreciable amounts of silt normally saturate quickly and establish equilibrium in a few test runs of short duration. Soils containing high amounts of clays generally require longer saturation periods at higher confining pressures, and require much longer permeation periods at higher hydraulic gradients. Results are reported based on the average of the last four consecutive tests meeting the requirements of equilibrium conditions.

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Client Project ID: TINKER AFB ETDC Project No.: 483500.094.04

IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN (615) 482-6497

Routed to OF TEX

Three permeability samples did not establish equilibrium conditions as defined by ASTM D 5084 before February 18, 1994, and were removed from testing in accordance with the memorandum dated February 9, 1994. The given results for sample numbers ETDC-4685, ETDC-4688, and ETDC-4692 are based on the average of three test runs, not four, as indicated in the ASTM reference. We feel that the final results would not have been significantly different had the samples been allowed to run until all the requirements of ASTM D 5084 had been met. These three samples approached the lower limit of permeability for most naturally occurring soils.

Appendix A

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Client Project ID: TINKER ETDC Project No.: 483500.

TINKER AFB 483500.094.04 IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN (615) 482-6497

Round - CF To 100

CROSS-REFERENCE LIST

ETDC SAMPLE NO.	CLIENT SAMPLE NO.
ETDC-4676	
ETDC-4677	
ETDC-4678	
ETDC-4679	
ETDC-4680	
ETDC-4681	
ETDC-4684	B311282-05A
ETDC-4685	B311282-05B
ETDC-4690	B311314-01A
ETDC-4691	B311314-01B
ETDC-4692	B311314-02A
ETDC-4693	B311314-02B

Appendix B

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Client Project ID: ETDC Project No.:

TINKER AFB 483500.094.04 IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN (615) 482-6497

PARTICLE SIZE ANALYSIS **ASTM D 422**

Roward to (F) Tags

Project Name:

Tinker AFB

Client No.

B311255-05A

Project Number: 483500.094.04

ETDC No. ETDC-4676

Specific Gravity 2.6500

Assumed

Moisture Content = 10.7%

SIEVE ANALYSIS

	Sieve	Diameter	Percent
С	No.	mm	Finer
Ö	3"	75.000	100.0%
Α	1.5"	37.500	100.0%
R	0.75"	19.000	100.0%
S	0.375"	9.500	100.0%
E	#4	4.750	100.0%
	#10	2.000	98.8%

	Sieve	Diameter	Percent
	No.	mm	Finer
F	#20	0.850	97.8%
- 1	#40	0.425	96.2%
N	#60	0.250	94.8%
Ε	#100	0.149	92.2%
	#140	0.106	89.7%
	#200	0.075	87.3%

HYDROMETER ANALYSIS

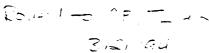
	Diameter	Percent
	mm	Finer
н		
Y	0.04243	78.5%
D	0.03065	74.1%
R	0.01978	68.6%
О М	0.01176	60.8%
E	0.00848	50.9%
Т	0.00603	45.3%
E	0.00426	40.9%
R	0.00300	32.1%
	0.00128	25.4%

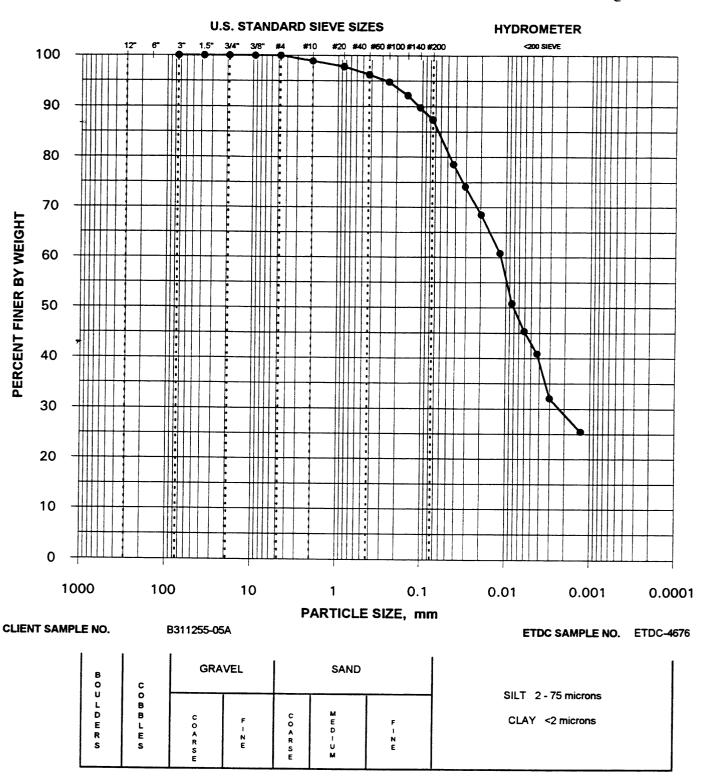
Page 7 of 20 Karmen Deane IT Corporation March 16, 1994

Client Project ID: TINKER AFB ETDC Project No.: 483500.094.04

IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN (615) 482-6497

Tinker AFB





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Client Project ID: ETDC Project No.:

TINKER AFB 483500.094.04

IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN (615) 482-6497

PARTICLE SIZE ANALYSIS **ASTM D 422**

Routed to CF, Tagen 3/21 0

Project Name:

Tinker AFB

Client No.

B311282-05A

Project Number: 483500.094.04

ETDC No. ETDC-4684

Specific Gravity 2.6500

Assumed

Moisture Content = 9.4%

SIEVE ANALYSIS

	Sieve	Diameter	Percent
С	No.	mm	Finer
Ō	3*	75.000	100.0%
Α	1.5*	37.500	100.0%
R	0.75"	19.000	100.0%
S E	0.375*	9.500	100.0%
E	#4	4.750	99.9%
	#10	2.000	99.6%

	Sieve	Diameter	Percent
	No.	mm	Finer
F	#20	0.850	98.9%
	#40	0.425	97.8%
N	#60	0.250	96.9%
E	#100	0.149	95.6%
	#140	0.106	93.7%
	#200	0.075	89.9%

HYDROMETER ANALYSIS

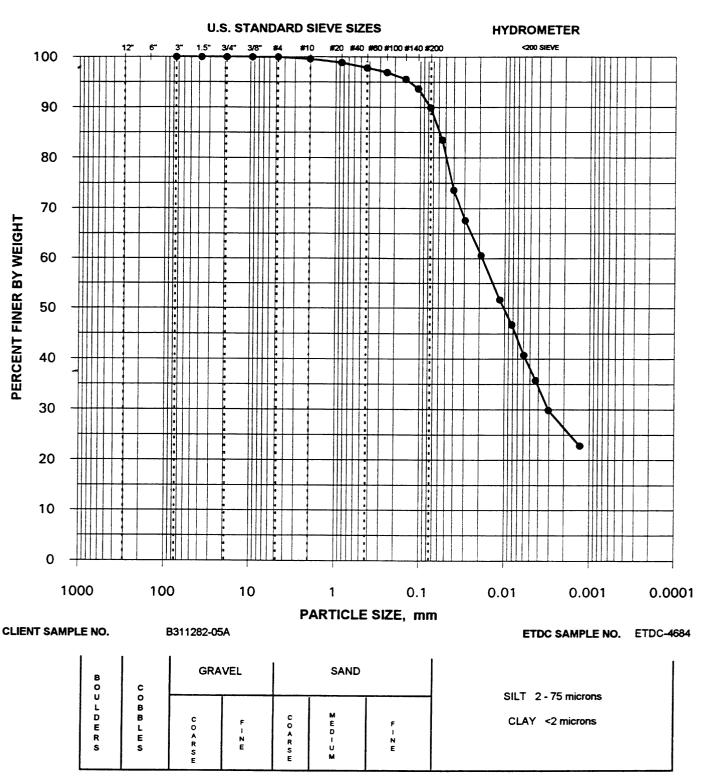
	Diameter	Percent
	mm	Finer
н	0.05460	83.5%
Υ	0.04040	73.6%
D	0.02933	67.6%
R	0.01912	60.6%
0 M	0.01146	51.7%
E	0.00823	46.7%
Т	0.00594	40.8%
E	0.00428	35.8%
R	0.00303	29.8%
	0.00128	22.9%

IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN (615) 482-6497

Client Project ID: TINKER AFB ETDC Project No.:

483500.094.04

Routed to CF 7 15 **Tinker AFB** 3/21-91



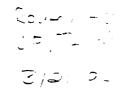
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Client Project ID: ETDC Project No.:

TINKER AFB 483500.094.04

IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN (615) 482-6497

MOISTURE CONTENT ASTM D 2216



PROJECT NAME:

TINKER AFB

PROJECT NUMBER:

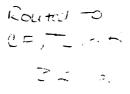
483500.094.04

ETDC SAMPLE NO.	CLIENT SAMPLE NO.	MOISTURE CONTENT
ETDC-4676	B311255-05A	10.7%
ETDC-4678	B311256-05A	8.5%
ETDC4680	B311256-06A	9.6%
ETDC-4684	B311282-05A	9.4%
ETDC-4690	B311314-01A	12.2%
ETDC-4692	B311314-01A	12.9%

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Client Project ID: TINKER AFB ETDC Project No.: 483500.094.04 IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN (615) 482-6497

CATION EXCHANGE CAPACITY EPA SW-846 **METHOD 9081**



PROJECT NAME: TINKER AFB

PROJECT NUMBER:

483500.094.04

ETDC SAMPLE NUMBER	CLIENT SAMPLE NUMBER	WEIGHT OF SAMPLE, GRAMS	SODIUM CONCENTRATION, MG/L	CATION EXCHANGE CAPACITY. MEQ/100 GRAMS	RPD %
ETDC-4676	B311255-05A	6.00	328.0	23.78	
FTDC 4670	2011050 054			F 61	
ETDC-4678	B311256-05A	6.02	77.6	5.61	
ETDC-4678DUP.	B311256-05A	6.05	80.2	5.77	2.8
ETDC-4680	B311256-06A	6.05	122.0	8.77	
ETDC-4684	B311282-05A	6.09	231.0	16.50	
ETDC-4690	B311314-01A	6.08	338.0	24.18	
ETDC-4692	B311314-02A	6.18	274.0	19.29	

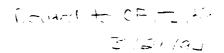
^{*}RPD = RELATIVE PERCENT DIFFERENCE FOR ORIGINAL & DUPLICATE SAMPLES

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Client Project ID: TI ETDC Project No.: 48

TINKER AFB 483500.094.04

IT ENVIRONMENTAL TECHNOLOGY DEVELOPMENT CENTER OAK RIDGE, TN (615) 482-6497



PERMEABILITY RESULTS

ETDC SAMPLE NO.	CLIENT SAMPLE NO.	LENGTH/ DIAMETER/ WEIGHT	COEFF. OF PERMEABILITY
ETDC-4677	B311255-05B	2.547 cm/ 3.464 cm/ 49.16 grams	3.2 E-9 cm/s
ETDC-4679	B311256-05B	4.752 cm/ 3.556 cm/ 83.51 grams	2.3 E-6 cm/s
ETDC-4681	B311256-06B	4.214 cm/ 3.585 cm/ 85.36 grams	9.2 E-7 cm/s
ETDC-4685	B311282-05B	5.318 cm/ 3.522 cm/ 107.14 grams	2.9 E-9 cm/s
ETDC-4691	B311314-01B	4.844 cm/ 3.494 cm/ 103.65 grams	2.6 E-9 cm/s
ETDC-4692	B311314-02A	3.979 cm/ 3.490 cm/ 81.88 grams	2.9 E-9 cm/s

14/10/8 Yellow: Field copy *See back of form for scedial instructions White: To accompany samples (DICE Disposal 22 23.63 1630 ITAS Austin Austin Reference Document No. FTNC OKA 676 Powder 10 CF, TL 4677 4678 4679 4680 Archive ETDC **V**4681 Date: Time: Date: Time: Date: Time: Condition on 21 ETDC / ETDC ETOC ETDC Karnen Report to: 10 77.45 Disposal by Lab 💪 Page 1 of S Bill to:5 ঠ CEC. A. GRATIN, MOTS. CEC. A. GRATH MOTS. CEC. A GRAIN MOTS.G Project Specific (specify): Requested Testing 20 Sample Disposal: 25 1- FOL M Return to Client Program V. Perm 11 PERM ONE CONTAINER PER LINE Project Contact/Phone 12512 892 668 4 B. Leaman 1. Received by 28 ANALYSIS REGULST AND **CHAIN OF CUSTODY RECORD*** FTOC 2. Received by(Signature/Affiliation) 3. Received by (Signature/Affiliation) Samples Shipment Date 7 11-22-93 (Signature/Affiliation) Carrier/Waybill No. 13 Fed X **Pre-** 19 servative **¬**′ Lab Destination 8 Lab Contact 9 Unknown Date/Time ¹⁶ Container ¹⁷ Sample ¹⁸ QC Level: 27 Volume 22.9 7 700 بک > Steeve Poison B 5/कि% Type) Date: 7 Time: Time: Date: Time: Date: 11-18-83 11-18-9 Collected 6-61-11 0906 **>** Skin Irritant Deane 8311255 Client Project Name/No. 17, nke 1500 Description/Type 4627 Sample 15 Possible Hazard Identification: 24 50,0 Project Manager 4 Farner Turnaround Time Required: 26 Purchase Order No. 6 سُرُ الْ Flammable 📋 35427 35428 263A 2-63A INTL. ATIONAL TECHNOLOGY CORPORATION \rightarrow Special Instructions: 23 Profit Center No. 3 Required Report Date 11 Sample Team Members 2 1. Relinquished by ²⁸/ Rush, B31125505A B 2. Relinquished by (Signature/Affiliation) 3. Relinquished by (Signature/Affiliation) -06A 8311256 25A -05B 068 Sample 14 Comments: 29 Non-hazard (Signature/Affiliation) Number Normal (

IN'. ATIONAL TECHNOLOGY CORPORATION 7,4/1282 Project Name/No. 1 33/1282 Sample Team Members 2 Clica + Profit Center No. 3 4627 Project Manager 4 (4/2/2) Project Manager 4 (4/2/2) Purchase Order No. 6 (6/1) (6) Required Report Date 11 12/14/2)	7.7/10,5001 B311282 Client 4627 164,me Deane Will Follow		ANALYSIS REQ. ST AND CHAIN OF CUSTODY RECORD Samples Shipment Date 7 1/~ 23~93 Lab Destination 8 \$\overline{L}79C\$ Lab Contact 9 Project Contact/Phone 12(\$12) 892- Carrier/Waybill No. 13\overline{L}3-\overline	S REQ. ST / SUSTODY REC SUSTODY REC Postination 8 E70C stination 8 E70C (Sontact 9) Contact 9 (YPhone 12(5/2) (aybill No. 13 & J- &	#80 ST AND RECOR 11-23-93 [70c (512) 892 (512) 892	3500.0°	Reference 1999 1 Bill to:5 Bill to:10	Reference Document No. Page 1 of 1778 Aughn Bill to:5 17785 Aughn Port to:10 2785 Aughn Comen Pens	near No.	4 1 7 7 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
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Special Instructions: 23 Possible Hazard Identification:	ation: 24		Poison B i	Inknown (L)		Sample Disposal:	25	Disposal by Lab	Archive	(mos)
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3. Relinquished by (Signature/Affiliation)		Date: Time:		Sign	3. Received by (Signature/Affiliation)	by			Date: Time:	
Comments: ²⁹										